# Watershed Data Base: Clayoquot Sound, Vancouver Island

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## ABSTRACT

Brown, T. G., I. V, Williams, and R. T. E. Pulfer. 1987. Watershed data base: Clayoquot Sound, Vancouver Island. Can. Data Rep. Fish. Aquat. Sci. 668: 83 p.

Catalogue of 34 Clayoquot Sound streams which provides information on: location, physical characteristics, forest cover, tenure status, biogeoclimatic variants and relative abundance of salmonid species. This catalogue was designed to provide a single source of the information considered essential to initial practical study designs for future fish/forestry research.

## RESUME

Brown, T. G., I. V, Williams, and R. T. E. Pulfer. 1987. Watershed data base: Clayoquot Sound, Vancouver Island. Can. Data Rep. Fish. Aquat. Sci. 668: 83 p.

Le présent catalogue porte sur 34 cours d'eau se déversant dans la baie Clayoquot et contient les données suivantes: situation géographique, caractéristiques physiques, couverture végétale, situation du terme, variantes biogéoclimatiques et abondance relative des salmonidés. Ce catalogue se veut une source unique d'informations considérées essentielles à la mise en oeuvre de projets de recherches pratiques en ichtyologie et en sylviculture.

## INTRODUCTION

British Columbia's watersheds support both fish and forest based resource values. Forest activities such as road construction, timber removal, and silvicultural practises have the potential of impacting salmonid production. It is essential that basic forestry related information be made available on a watershed by watershed basis. This report integrates an individual watershed's physical characteristics with its logging history and salmonid escapements. Information on thirty-four watersheds located within Clayoquot Sound was collected (Fig. 1).

A data base formatted in this manner provides a single source of information which aids habitat research and management; and specifically fish/forestry research. Sound, practical study designs can be formulated and stream study pairs or watersheds having a variety of harvesting dates can be identified quickly.

This data base will aid in determining the applicability of findings from the Carnation Creek experimental project (Hartman 1982) to other west coast watersheds. Watersheds having similar physical characteristics, salmonid escapements or harvesting histories can be identified. Biological processes within these watersheds can be examined and compared to the processes observed within Carnation Creek.

The watersheds listed within this report can be subjectively grouped based on their similar features. Management decisions can be based on those features of a watershed which have been deemed to cause a known response in another similar featured watershed. Groups of watersheds that may be subjected to similar forestry practices in the near future (e.g. harvesting of second growth timber) can be identified and decisions can be made on a group of watersheds rather than on single watersheds.

This report was designed to be a general over-view of the area examined. Information contained within this report varies in its accuracy depending on its sources. Specific variables have been measured to varying degrees of precision from watershed to watershed.

## INFORMATION SOURCES

Information and data contained within this report were obtained from the following sources:

1. General information on stream location, orientation and physical characteristics were obtained from topographical maps supplied by Surveys and Resource Mapping Branch, Ministry of Environment and Parks, Parliament Buildings, Victoria. A scale of 1:50,000 was used in most cases.

2. Forest cover information, including: date and area of cut or re-establishment of stands, tenure status, and length of roads were obtained from forest cover maps supplied by B. C. Forest Service, MacMillan Bloedel Ltd, Brit'ıh Columbia Forest Products Ltd, and Pacific Forest Products Ltd. All estimates of area were obtained with a polar compensating planimeter.

3. A map entitled "Biogeoclimatic Units of the Vancouver Forest Region" supplied by the Province of British Columbia, Ministry of Forest Branch was used to establish the primary and secondary biogeoclimatic variants of each watershed. A further description of these units is given by Klinka et al. (1979) and Klinka et al. (1984).

4. Salmonid escapements were estimated from existing fisheries escapement records, from publications containing escapement values (Brown et al. 1979), and through consultation with fisheries officers.

## STANDARDS USED

### LOCATION AND ACCESS INFORMATION

Each watershed's location, study accessibility, map reference numbers and tenure status is recorded in Table 1. The column labels correspond to:

1. NO — Number given to each watershed, based on alphabetical order of stream name.

2. NAME — Name as given by Brown et al. 1979.

3. RIVER — If a named watershed is a tributary of another river, then that river is given under this heading. If a named watershed flows directly into the ocean then the river is designated as "NONE".

4. SPECIFIC — A named body of salt-water into which a river or stream flows.

5. LAT — The latitude of the estuary or most downstream section of a watershed.

6. LONG — The longitude of the estuary or most downstream section of a watershed.

7. CODE — The numbers 0 to 4 indicate the relative ability of persons to enter and travel within a watershed. These numbers correspond to:

| VALUE | DESCRIPTION |
|---|---|
| 0 | No roads entering watershed and no roads within watershed. Access is by boat or plane only. |
| 1 | No roads entering watershed. Only a small portion of the watershed is serviced by an isolated road within the watershed. |
| 2 | No roads entering watershed, however, most of the watershed is serviced by isolated roads within the watershed. |
| 3 | Good access to the watershed by road, but only a small portion of the watershed is accessible. |
| 4 | Good access to the watershed and good access throughout the entire watershed by road. |

8. TOPO — Serial number of main topographic map on which the named creek or river can be located.

9. COVER — The serial number of the main forest cover map on which the named creek or river can be located.

10. TFL — The percentage of the area within a watershed which is considered to be Tree Farm Licence. Within the Clayoquot Sound region all land designated as T.F.L. will be either "Alberni" T.F.L. 44, administered by MacMillan Bloedel Ltd, or T.F.L. 46, administered by British Columbia Forest Products Ltd.

11. DEED — This designation includes all privately owned land including Mineral leases, and lands considered parks. The status of forest cover and cutting histories are unknown. The headwaters of many river systems within Clayoquot sound originate within Strathcona Park.

12. INDIAN — This designation includes the percentage of a watershed which is Indian Reserve. If an Indian Reserve is located within a watershed and is less than 1% of that watersheds total area, it is still designated as 1%. The status of forest cover and cutting histories are unknown.

13. TSA — This designation includes all forest land other than those considered to be Tree Farm Licences. Timber Supply Areas, are administered by the B. C. Forest Service. Within Clayoquot Sound the major companies operating on T.S.A. designated land are: British Columbia Forest Products L.T.D., and Pacific Forest Products L.T.D.

PHYSICAL VARIABLES

The physical characteristics of each of the watersheds are outlined in Table 2. The column labels correspond to:

1. NO — As indicated.

2. NAME — As indicated.

3. ORIENTATION — General compass direction from upper elevation to lower elevations. Thus, a stream which has its headwaters in the north and estuary in the south would be described as "N-S".

4. PRIMARY A biogeoclimatic variant portrays the relationship between ecosystems and climate. Watersheds with similar biogeoclimatic variants will have a similar climate and a similar vegetative association at climax. The zones, subzones and variants are listed below and are further described by Klinka et al. (1984).

| ZONES | SUBZONES | VARIANT | SYMBOL |
|---|---|---|---|
| Coastal Douglas Fir | Drier CDF | | CFa |
| | Wetter CDF | | CFb |
| Coastal Western Hemlock | Drier Maritime CWH | Vancouver Island | Ha1 |
| | | Pacific Ranges | Ha2 |
| | Wetter CWH | Windward Submontane Maritime | Hb1 |
| | | Windward Montane Maritime | Hb2 |
| | | Leeward Submontane Maritime | Hb3 |
| | | Leeward Montane Maritime | Hb4 |
| | | Southern Submaritime | Hb5 |
| | | Central Submaritime Lower | Hb6 |
| | | Central Submaritime Upper | Hb7 |
| | Drier Submaritime CWH | Southern | Hc1 |
| | | Central | Hc2 |
| | Hypermaritime CWH | Southern | Hd1 |

5. SECONDARY A biogeoclimatic variant which covers a smaller percentage of the watershed then does the primary biogeoclimatic variant.

6. DRAINAGE Watershed area including lakes, given in $km^2$.

7. LAKE AREA — Area of all lakes in $km^2$.

8. TOTAL — Total length of a stream or river, in km, estimated from forest cover maps.

9. ACCESS — Length of stream or river, in km, that is accessible to anadromous fish.

10. GRAD — Gradient of stream within accessible length was calculated from topographic maps.

11. MAX — The highest point within a watershed in meters.

12. ORDER — The stream order of the watershed.

13. TRIBS — The number of tributaries within the accessible length.

FORESTRY AND FISHERIES INFORMATION

The location of all 34 watersheds is indicated in Figure 1. Forestry and fisheries resource information is illustrated for each watershed (Appendix I). A description of each of the charts and graphs is given below.

1. CUT HISTORY (Bar Graph)

Year of harvest or year of re-establishment of forest cover is indicated as both number of hectares cut and by percentage of the entire watershed affected.

2. PERCENT OF WATERSHED (Pie Chart)

The percentages of the watershed which should be represented by a specific successional stage were calculated from forest cover maps. These are as follows:

| AGE | STAGE |
|---|---|
| 0 - 15 | Recent Clear-cut |
| 6 - 15 | Early Successional |
| 16 - 30 | Young Immature Poles |
| 31 - 50 | Pre-Commercial Poles |
| 51 + | Second Growth |
| Uncut | Old Growth |

3. FISH SPECIES (Bar Graph)

The escapement values for each of the five Pacific Salmon species and Steelhead trout are indicated. The population size index, refers to:

| INDEX VALUE | DESCRIPTION |
|---|---|
| 0 | No fish observed |
| 1 | Present some years only |
| 2 | 1 - 100 |
| 3 | 100 - 1,000 |
| 4 | 1,000 - 10,000 |
| 5 | + 10,000 |

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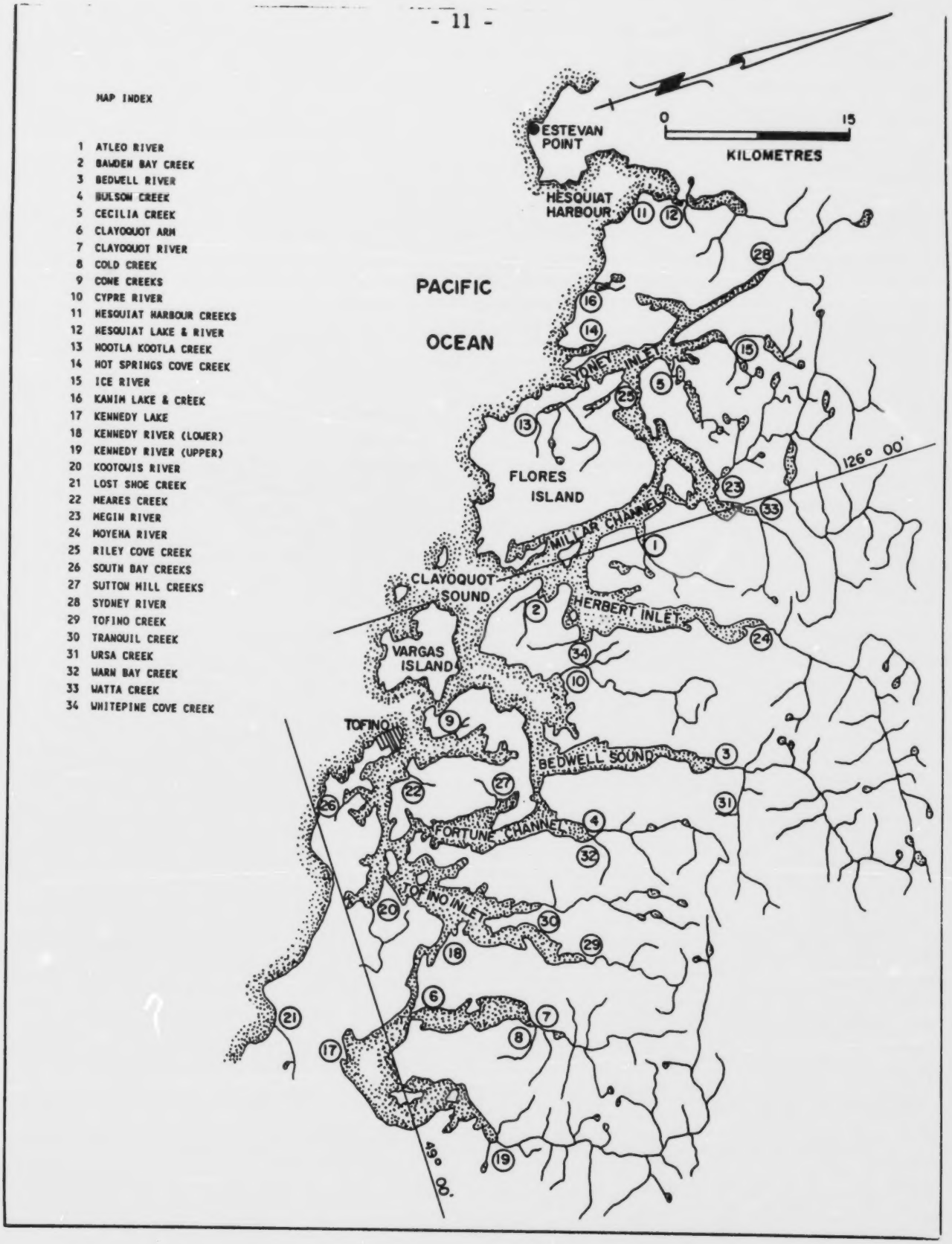



Figure 1. Map of Clayoquot Sound

APPENDIX I. CLAYOQUOT SOUND STREAMS; LOCATION AND ACCESS INFORMATION

| NO | NAME | RIVER | LOCATION SPECIFIC | LAT | LONG | ACCESS CODE | ACCESS TOPO | MAP COVER | TENURE TFL | TENURE DEED | TENURE INDIAN | TENURE TSA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ATLEO RIVER | NONE | MILLAR CHANNEL | 49.23 | 126.04 | 2 | 92E/8 | 92E.040 | 99% | 0% | 1% | 0% |
| 2 | BAWDEN BAY CREEK | NONE | MILLAR CHANNEL | 49.17 | 126.00 | 2 | 92E/8 | 92E.030 | 99% | 0% | 1% | 0% |
| 3 | BEDWELL RIVER | NONE | BEDWELL SOUND | 49.21 | 125.47 | 1 | 92F/5 | 92F.032 | 29% | 71% | 1% | 0% |
| 4 | BULSON CREEK | NONE | FORTUNE CHANNEL | 49.16 | 125.44 | 1 | 92F/SW | 92F.032 | 100% | 0% | 0% | 0% |
| 5 | CECILA CREEK | NONE | SYDNEY INLET | 49.24 | 126.12 | 0 | 92E/8 | 92E.049 | 6% | 0% | 0% | 94% |
| 6 | CLAYOQUOT ARM | KENNEDY RIVER | KENNEDY INLET | 49.07 | 125.34 | 4 | 92F/4 | 92F.013 | 98% | 2% | 0% | 0% |
| 7 | CLAYOQUOT RIVER | NONE | KENNEDY INLET | 49.12 | 125.32 | 0 | 92F/SW | 92F.023 | 99% | 0% | 1% | 0% |
| 8 | COLD CREEK | NONE | KENNEDY INLET | 49.11 | 125.32 | 0 | 92F/SW | 92F.013 | 95% | 4% | 1% | 0% |
| 9 | CONE CREEKS | NONE | MEARES ISLAND | 49.12 | 125.54 | 0 | 92F/4 | 92F.021 | 100% | 0% | 0% | 0% |
| 10 | CYPRE RIVER | NONE | CYPRESS BAY | 49.17 | 125.55 | 2 | 92F/5 | 92F.031 | 99% | 0% | 1% | 0% |
| 11 | HESQUIAT HARBOUR CREEKS | NONE | HESQUIAT HARBOUR | 49.23 | 126.20 | 2 | 92E/8 | N/A | 99% | 0% | 1% | 0% |
| 12 | HESQUIAT RIVER AND LAKE | NONE | HESQUIAT HARBOUR | 49.29 | 126.24 | 0 | 92E/8 | 92E.059 | 100% | 0% | 0% | 0% |
| 13 | HOOTLA KOOTLA CREEK | NONE | SYDNEY INLET | 49.23 | 126.17 | 1 | 92E/8 | 92E.040 | 81% | 0% | 1% | 18% |
| 14 | HOT SPRINGS COVE CREEK | NONE | HOT SPRINGS COVE | 49.23 | 126.16 | 2 | 92E/8 | 92E.039 | 17% | 0% | 0% | 83% |
| 15 | ICE RIVER | NONE | HOLMES INLET | 49.49 | 126.14 | 0 | 92E/8 | 92E.050 | 100% | 0% | 0% | 0% |
| 16 | KANIM LAKE AND CREEKS | NONE | SYDNEY INLET | 49.24 | 126.21 | 2 | 92E/8 | 92E.039 | 100% | 0% | 0% | 0% |
| 17 | KENNEDY LAKE | KENNEDY RIVER | KENNEDY COVE | 49.04 | 125.33 | 4 | 92F/4 | 92F.003 | 95% | 5% | 0% | 0% |
| 18 | KENNEDY RIVER (LOWER) | NONE | KENNEDY COVE | 49.07 | 125.39 | 4 | 92F/4 | 92F.012 | 99% | 0% | 1% | 0% |
| 19 | KENNEDY RIVER (UPPER) | KENNEDY RIVER (LOWER) | KENNEDY COVE | 49.09 | 125.25 | 4 | 92F/5 | 92F.014 | 68% | 1% | 1% | 30% |
| 20 | KOOTOWIS CREEK | NONE | TOFINO INLET | 49.05 | 125.42 | 4 | 92F/SW | 92F.002 | 99% | 0% | 1% | 0% |
| 21 | LOST SHOE CREEK | NONE | FLORENCIA BAY | 49.00 | 125.40 | 4 | 92F/4 | 92F.002 | 88% | 11% | 1% | 0% |
| 22 | MEARES CREEK | NONE | BROWNING PASSAGE | 49.09 | 125.52 | 0 | 92F/4 | 92F.011 | 100% | 0% | 0% | 0% |
| 23 | MEGIN RIVER | NONE | SHELTER INLET | 49.24 | 126.05 | 0 | 92E/8 | 92E.050 | 99% | 0% | 1% | 0% |
| 24 | MOYEHA RIVER | NONE | HERBERT INLET | 49.26 | 125.54 | 0 | 92F/5 | N/A | 0% | 100% | 0% | 0% |
| 25 | RILEY COVE CREEK | NONE | SYDNEY INLET | 49.20 | 126.13 | 1 | 92E/8 | 92E.039 | 90% | 0% | 0% | 10% |
| 26 | SOUTH BAY CREEKS | NONE | BROWNING PASSAGE | 49.07 | 125.40 | 3 | 92F/4 | N/A | 40% | 60% | 0% | 0% |
| 27 | SUTTON MILL CREEKS | NONE | MOSQUITO HARBOUR | 49.12 | 125.48 | 0 | 92F/4 | 92F.021 | 100% | 0% | 0% | 0% |
| 28 | SYDNEY RIVER | NONE | SYDNEY INLET | 49.32 | 126.18 | 0 | 92E/9 | 92E.059 | 100% | 0% | 0% | 0% |
| 29 | TOFINO CREEK | NONE | TOFINO INLET | 49.14 | 125.36 | 0 | 92F/4 | 92F.023 | 99% | 0% | 1% | 0% |
| 30 | TRANQUIL CREEK | NONE | TOFINO INLET | 49.14 | 125.40 | 2 | 92F/SW | 92F.022 | 99% | 0% | 1% | 0% |
| 31 | URSA CREEK | BEDWELL RIVER | BEDWELL SOUND | 49.23 | 125.40 | 1 | 92F/5 | 92F.032 | 100% | 0% | 0% | 0% |
| 32 | WARN BAY CREEK | NONE | FORTUNE CHANNEL | 49.15 | 125.44 | 2 | 92F/SW | 92F.022 | 100% | 0% | 0% | 0% |
| 33 | WATTA CREEK | NONE | MILLAR CHANNEL | 49.28 | 126.00 | 0 | 92F/SW | 92E.051 | 99% | 0% | 1% | 0% |
| 34 | WHITEPINE COVE CREEK | NONE | HERBERT INLET | 49.18 | 125.57 | 2 | 92F/SW | 92F.021 | 97% | 0% | 3% | 0% |

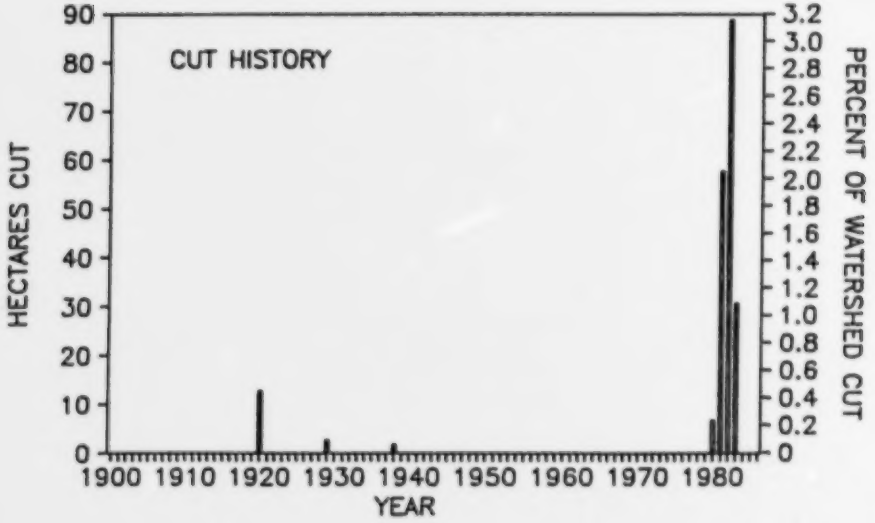
APPENDIX II. CLAYOQUOT SOUND STREAMS; PHYSICAL VARIABLES

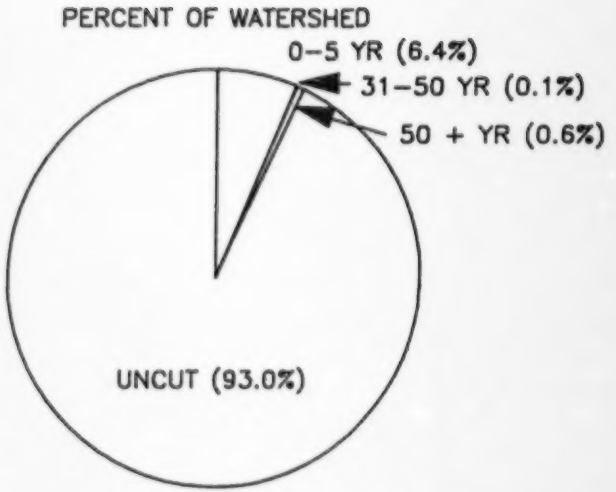
| NO. | NAME | ORIENTATION | BIOGEOCLIMATIC VAR. PRIMARY | BIOGEOCLIMATIC VAR. SECONDARY | AREA (sq.m) DRAINAGE | AREA (sq.m) LAKE AREA | LENGTH (km) TOTAL | LENGTH (km) ACCESS | ELEVATION GRAD | ELEVATION MAX (m) | ORDER | TRIBS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ATLEO RIVER | E-W | Hb1 | Hb2 | 29.0 | 1.00 | 9.7 | 9.0 | 3% | 1207 | 3 | 20 |
| 2 | BAWDEN BAY CREEK | E-W | Hb1 | Hb2 | 7.4 | 0.01 | 4.2 | 2.6 | 1% | 962 | 3 | 3 |
| 3 | BEDWELL RIVER | E-W | Hb1 | Hb2 | 135.0 | 0.80 | 22.0 | 8.0 | 1% | 1800 | 6 | 13 |
| 4 | BULSON CREEK | N-S | Hb1 | Hb2 | 75.0 | 0.45 | 21.8 | 0.1 | 1% | 1294 | 5 | 0 |
| 5 | CECILA CREEK | E-W | Hb1 | Hb2 | 18.0 | 2.70 | 1.6 | 1.6 | 0% | 880 | 1 | 0 |
| 6 | CLAYOQUOT ARM | N-S | Hb1 | Hd1 | 54.5 | 14.90 | 11.1 | 11.1 | 0% | 1172 | 5 | 24 |
| 7 | CLAYOQUOT RIVER | N-S | Hb1 | Hb2 | 64.7 | 0.90 | 14.4 | 9.0 | 3% | 1395 | 5 | 22 |
| 8 | COLD CREEK | E-W | Hb1 | Hb2 | 5.9 | 0.00 | 4.8 | 1.5 | 7% | 1050 | 3 | 0 |
| 9 | CONE CREEKS | N-S | Hd1 | Hb1 | 1.5 | 0.00 | 1.6 | 1.1 | 8% | 730 | 2 | 2 |
| 10 | CYPRE RIVER | N-S | Hb1 | Hd1 | 60.0 | 0.07 | 21.0 | 16 | 3% | 1392 | 5 | 26 |
| 11 | HESQUIAT HARBOUR CREEK | E-W | Hd1 | Hb2 | 33.8 | 0.13 | 15.6 | 11 | 3% | 840 | 3 | 22 |
| 12 | HESQUIAT RIVER AND LAKE | N-S | Hb1 | Hb2 | 62.0 | 4.60 | 16.0 | 15 | 3% | 996 | 5 | 24 |
| 13 | HOOTLA KOOTLA CREEK | S-N | Hd1 | Hb1 | 29.9 | 0.60 | 10.2 | 5 | 2% | 720 | 5 | 3 |
| 14 | HOT SPRINGS COVE CREEK | N-S | Hd1 | Hb1 | 6.4 | 0.00 | 3.6 | 1.6 | 2% | 640 | 2 | 0 |
| 15 | ICE RIVER | N-S | Hb1 | Hb2 | 38.0 | 2.00 | 8.0 | 3.5 | 1% | 1080 | 4 | 6 |
| 16 | KANIM LAKE AND CREEKS | E-W | Hd1 | Hb1 | 25.0 | 1.20 | 10.0 | 6 | 10% | 710 | 2 | 16 |
| 17 | KENNEDY LAKE | E-W | Hb1 | Hd1 | 179.0 | 45.80 | 29.7 | 29.6 | 0% | 1040 | 6 | 29 |
| 18 | KENNEDY RIVER (LOWER) | E-W | Hd1 | Hb1 | 29.6 | 1.60 | 7.9 | 7.9 | 0% | 660 | 6 | 5 |
| 19 | KENNEDY RIVER (UPPER) | N-S | Hb1 | Hb2 | 216.3 | 1.10 | 42.2 | 19.3 | 2% | 1521 | 5 | 30 |
| 20 | KOOTOWIS CREEK | E-W | Hd1 | Hb1 | 23.0 | 0.10 | 10.8 | 10.0 | 3% | 250 | 4 | 6 |
| 21 | LOST SHOE CREEK | E-W | Hd1 | none | 23.0 | 0.10 | 10.0 | 9.0 | 0% | 800 | 3 | 6 |
| 22 | MEARES CREEK | E-W | Hd1 | Hb1 | 1.8 | 0.00 | 2.4 | 1.4 | 7% | 700 | 3 | 1 |
| 23 | MEGIN RIVER | N-S | Hb1 | Hb2 | 218.2 | 4.00 | 35.2 | 23.4 | 1% | 1399 | 6 | 37 |
| 24 | MOYEHA RIVER | E-W | Hb1 | Hb2 | 173.8 | 0.80 | 28.0 | 11.9 | 1% | 1801 | 5 | 16 |
| 25 | RILEY COVE CREEK | S-N | Hd1 | Hb1 | 5.5 | 0.60 | 4.4 | 4.2 | 1% | 480 | 2 | 2 |
| 26 | SOUTH BAY CREEKS | S-N | Hd1 | none | 8.7 | 0.00 | 7.0 | 7.0 | 0% | 96 | 3 | 6 |
| 27 | SUTTON MILL CREEKS | W-E | Hd1 | Hb1 | 6.6 | 0.00 | 4.2 | 1.6 | 5% | 700 | 2 | 3 |
| 28 | SYDNEY RIVER | N-S | Hb1 | Hb2 | 59.0 | 0.75 | 9.0 | 8.0 | 2% | 996 | 5 | 24 |
| 29 | TOFINO CREEK | N-S | Hb1 | Hb2 | 43.4 | 0.00 | 14.2 | 8.0 | 3% | 1323 | 5 | 13 |
| 30 | TRANQUIL CREEK | N-S | Hb1 | Hb2 | 60.5 | 1.40 | 18.0 | 8.0 | 2% | 1388 | 5 | 16 |
| 34 | URSA CREEK | E-W | Hb1 | Hb2 | 72.0 | 0.21 | 17.0 | 20 | 1% | 1612 | 5 | 12 |
| 31 | WARN BAY CREEK | E-W | Hb1 | Hb2 | 8.4 | 0.00 | 4.0 | 3.2 | 9% | 1167 | 3 | 5 |
| 32 | WATTA CREEK | E-W | Hb1 | Hb2 | 39.4 | 0.07 | 10.6 | 4 | 6% | 1479 | 5 | 9 |
| 33 | WHITEPINE COVE CREEK | S-N | Hd1 | Hb1 | 5.7 | 0.00 | 4.6 | 3.2 | 6% | 964 | 3 | 2 |

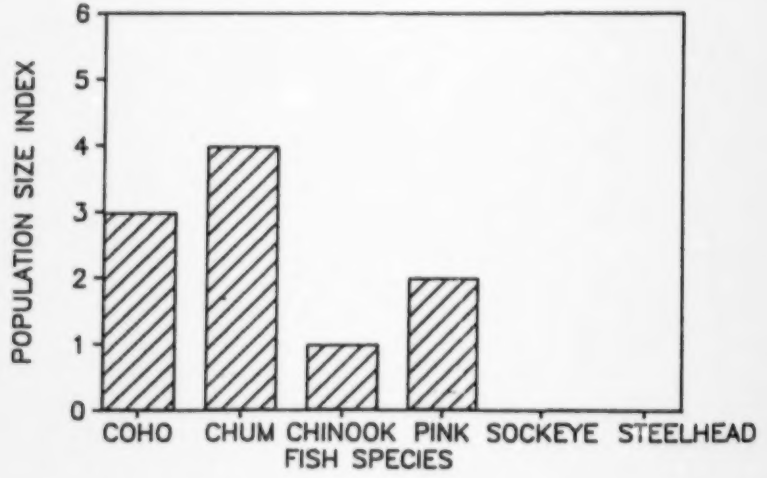
APPENDIX III. FORESTRY CUT HISTORIES AND SALMONID ESCAPEMENTS BY WATERSHED

| NO. | NAME |
|---|---|
| 1. | ATLEO RIVER |
| 2. | BAWDEN BAY CREEK |
| 3. | BEDWELL RIVER |
| 4. | BULSON CREEK |
| 5. | CECILIA CREEK |
| 6. | CLAYOQUOT ARM |
| 7. | CLAYOQUOT RIVER |
| 8. | COLD CREEK |
| 9. | CONE CREEKS |
| 10. | CYPRE RIVER |
| 11. | HESQUIAT HARBOUR CREEKS |
| 12. | HESQUIAT LAKE & RIVER |
| 13. | HOOTLA KOOTLA CREEK |
| 14. | HOT SPRINGS COVE CREEK |
| 15. | ICE RIVER |
| 16. | KANIM LAKE & CREEK |
| 17. | KENNEDY LAKE |
| 18. | KENNEDY RIVER (LOWER) |
| 19. | KENNEDY RIVER (UPPER) |
| 20. | KOOTOWIS RIVER |
| 21. | LOST SHOE CREEK |
| 22. | MEARES CREEK |
| 23. | MEGIN RIVER |
| 24. | MOYEHA RIVER |
| 25. | RILEY COVE CREEK |
| 26. | SOUTH BAY CREEKS |
| 27. | SUTTON MILL CREEKS |
| 28. | SYDNEY RIVER |
| 29. | TOFINO CREEK |
| 30. | TRANQUIL CREEK |
| 31. | URSA CREEK |
| 32. | WARN BAY CREEK |
| 33. | WATTA CREEK |
| 34. | WHITEPINE COVE CREEK |

# ATLEO RIVER




1. The watershed is composed of T.F.L. 44 (51%), and T.F.L. 46 (48%). All of the forest harvesting activities prior to 1984 were within T.F.L. 44 which is located in the lower half of the watershed. Few major cuts have been made on land adjacent to the river. There is good road access throughout the watershed.

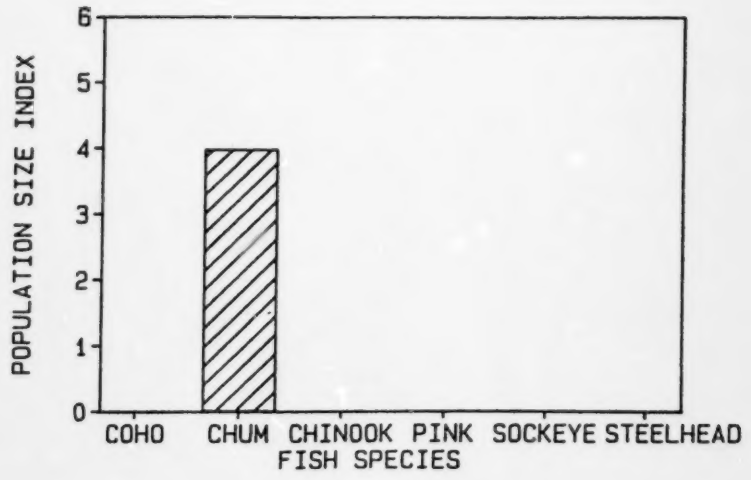
The area below Barra Lake is extremely flat. The river in this section is composed of multiple channels terminating in a large estuary. Upper regions of the stream contain many 1st and 2nd order streams which could act as study pairs.

# BAWDEN BAY CREEK

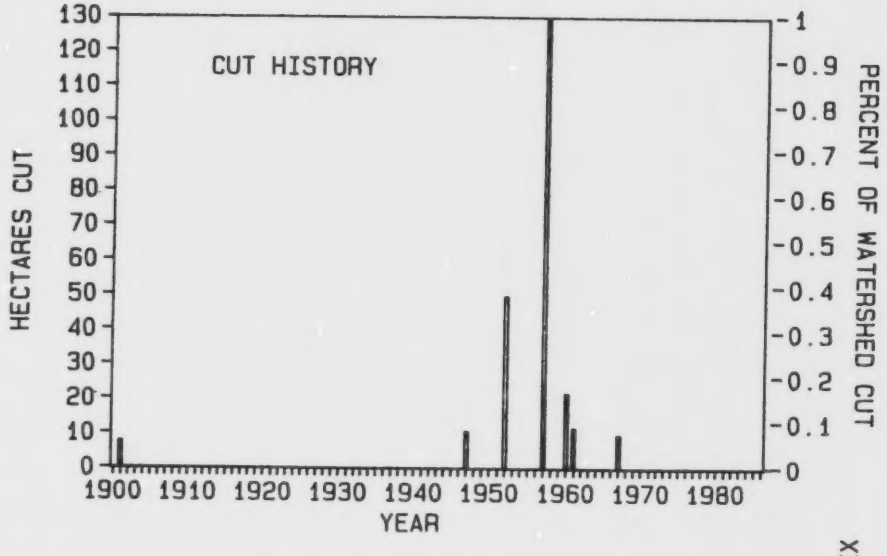
## NO LOGGING HISTORY

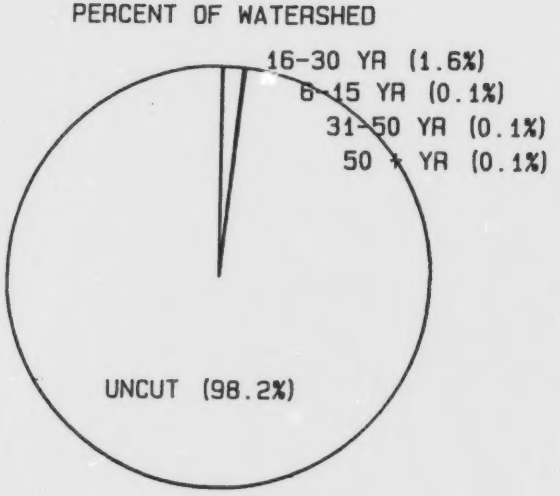
2. The watershed is composed of T.F.L. 44 (49%), and T.F.L. 46 (50%). Fisheries officers have indicated that logging has occurred in the lower portion of the watershed prior to 1977, but this is not indicated on forest cover maps. Half of the watershed is contained within the Catface Mountain Range with limited road access.

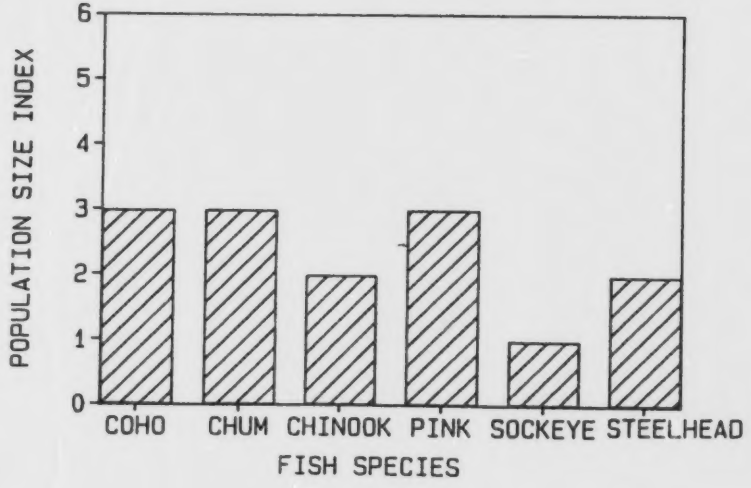
The stream has good spawning conditions with little effect from erosion or silting.



# BEDWELL RIVER



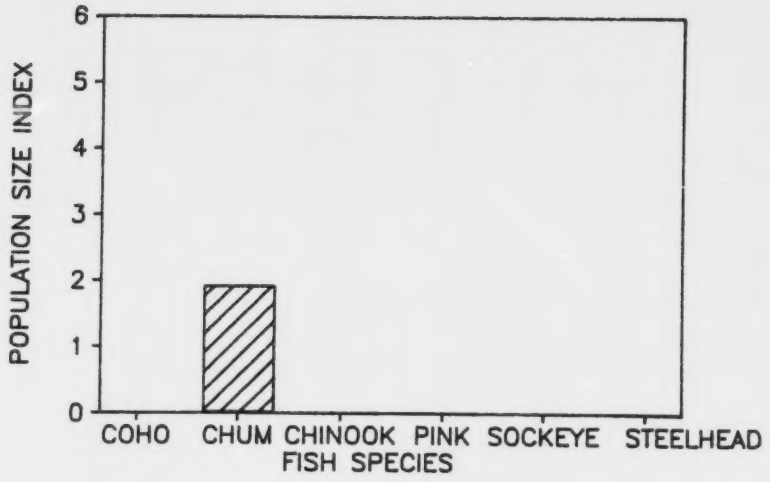

3. The watershed is composed of T.F.L. 44 (30%), and the Strathcona Provincial Park (70%). There are two major 5th order streams suitable for a paired study. There is an impassible falls at 8 km. restricting the accessible length to anadromous fish to the T.F.L. 44 area.

Logging has occurred adjacent to the river throughout the accessible length.

# BULSON CREEK

## NO LOGGING HISTORY

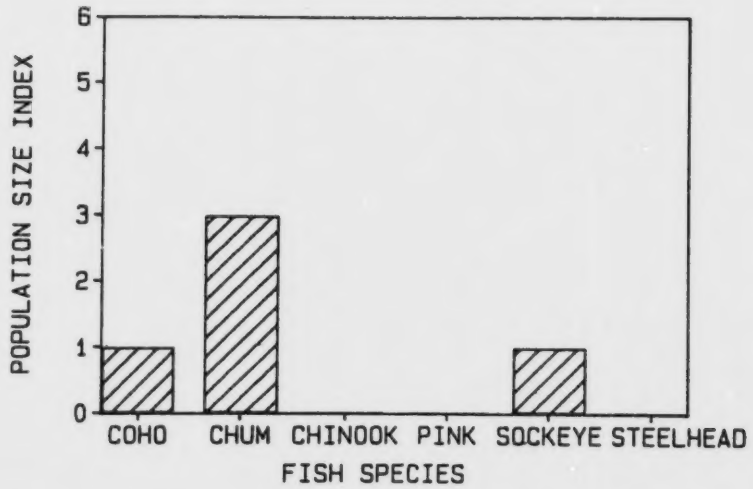
4. The forest tenure is T.F.L. 44. Falls located at the mouth of the river restrict the spawnable length to 50m. A large estuary is present. Road access is limited to the lower end of the system.



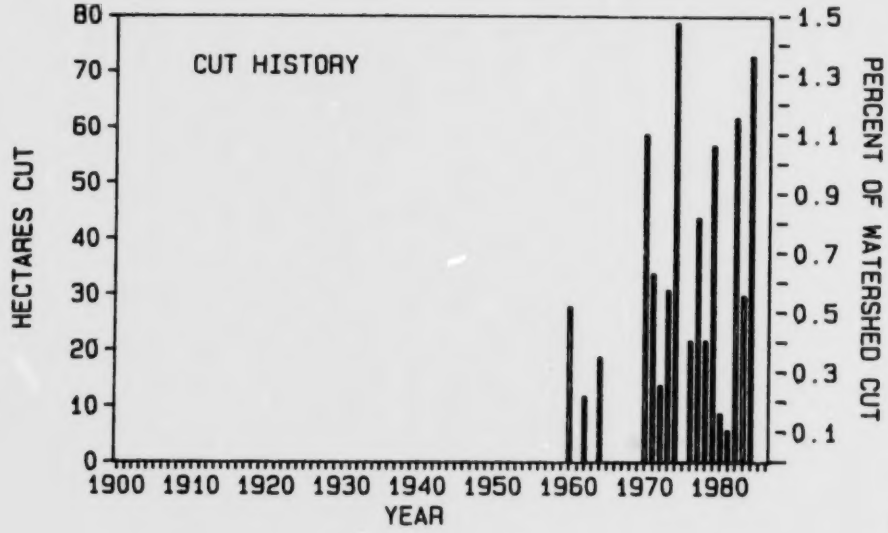
# CECILA CREEK

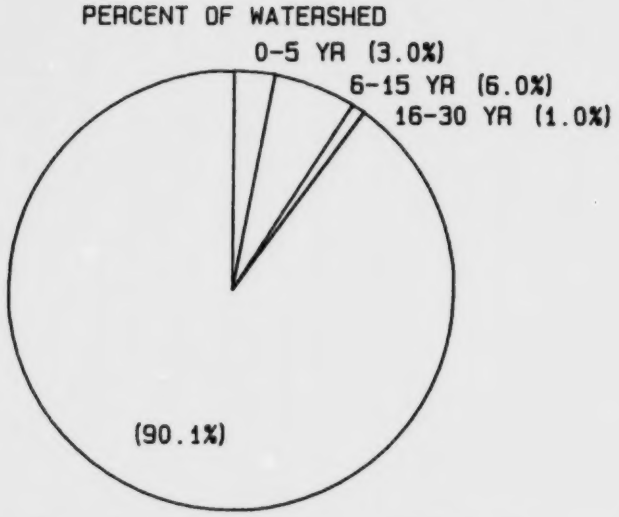
## NO LOGGING HISTORY

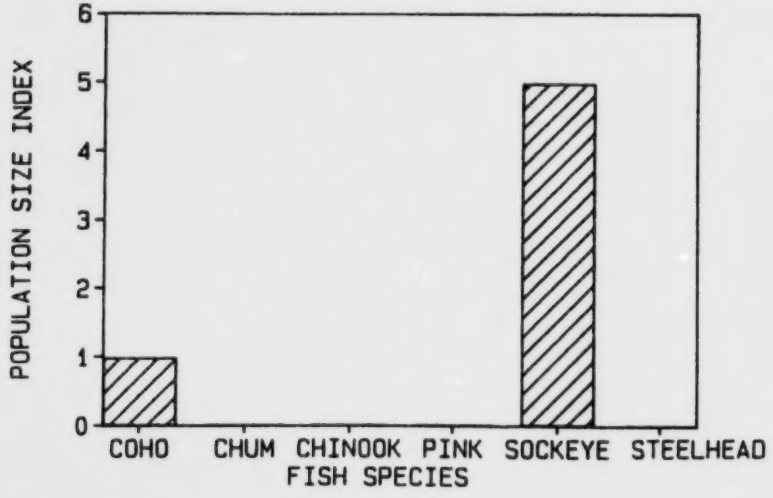
5. The watershed is composed of T.F.L. 46 (94%), and T.F.L. 44 (6%). The creek is flat with 2.7 $km^2$ of lakes within the accessible length to anadromous fish. There is a falls at the outlet of Easter Lake that may prove impassible to salmon.



# CLAYOQUOT ARM



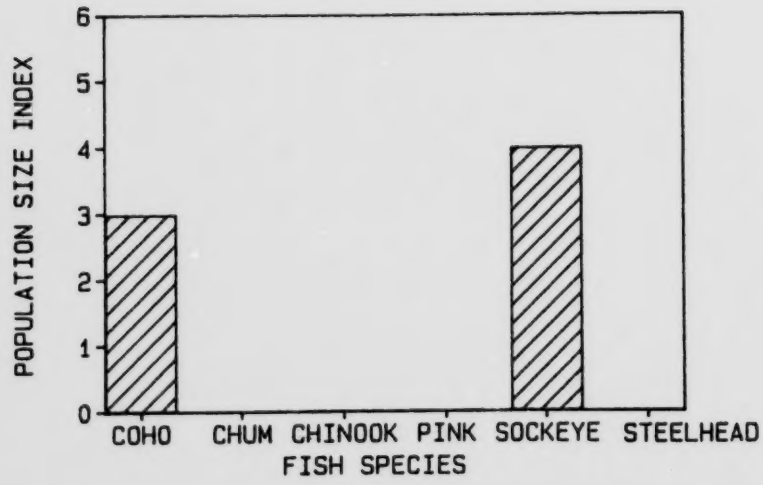

6. The watershed is composed of T.F.L. 44 (82%), T.F.L. 46 (16%), and deeded land (2%). It contains many 1st and 2nd order streams suitable for paired studies. Excellent road access is available throughout.

The east side of the watershed has been logged primarily adjacent to Clayoquot Arm.

# CLAYOQUOT RIVER

## NO LOGGING HISTORY

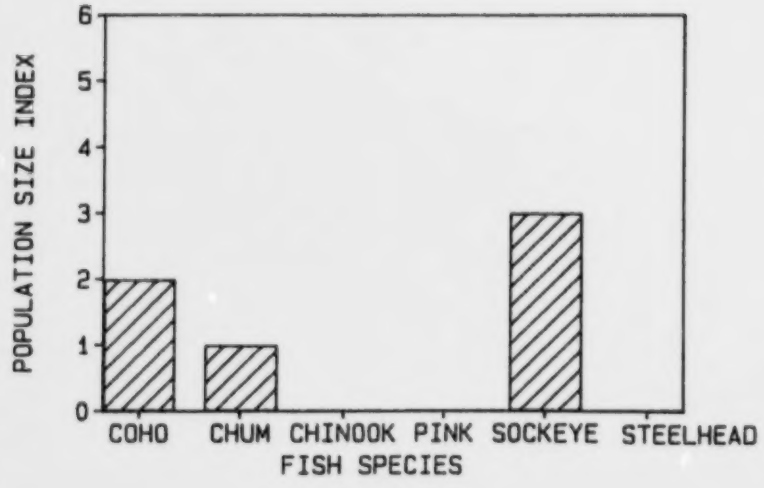
7. The forest tenure is T.F.L. 44. This site could provide a good location for a process study on the effect of logging on sockeye. The river has numerous spawnable tributaries, but road access is poor.



# COLD CREEK

## NO LOGGING HISTORY

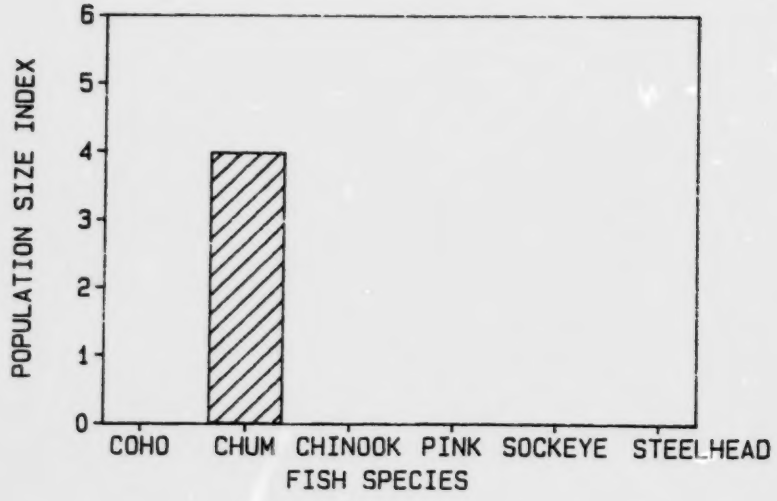
8. The forest tenure is T.F.L. 44. Fisheries officers report that logging has occurred in the upper reaches of the creek in the early 1960s. This is not indicated on forest cover maps. The lower areas of the creek are ideal spawning grounds.



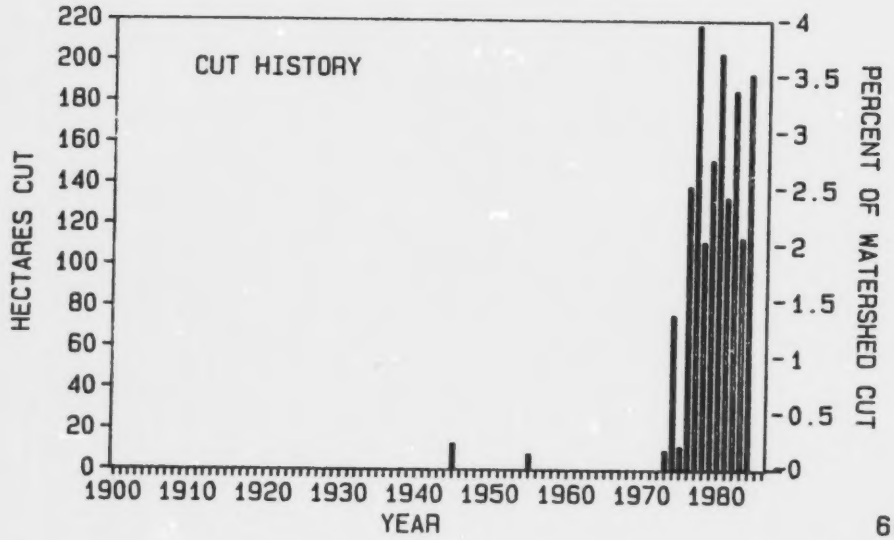
# CONE CREEKS

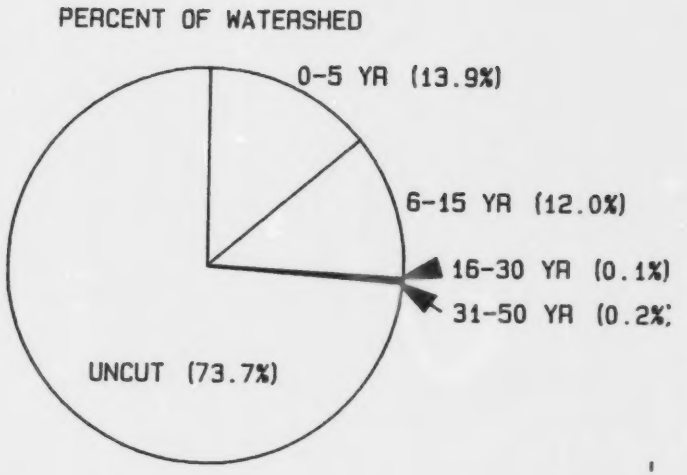
## NO LOGGING HISTORY

9. The forest tenure is T.F.L. 44. Low water levels have caused high mortality to fish prior to spawning. The river flows into a large protected estuary.



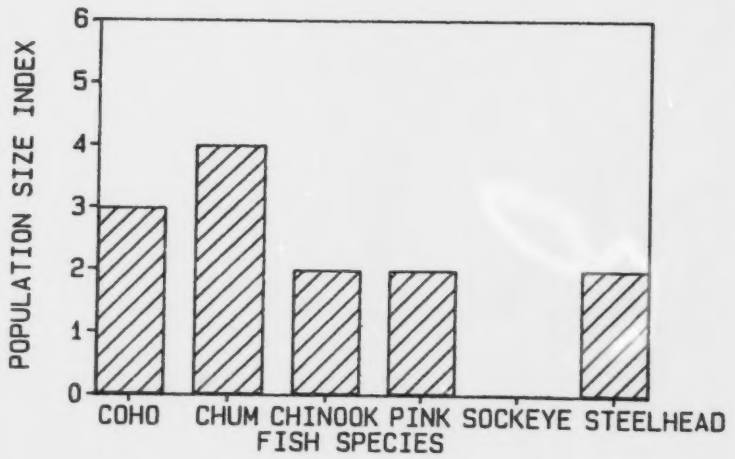
# CYPRE RIVER



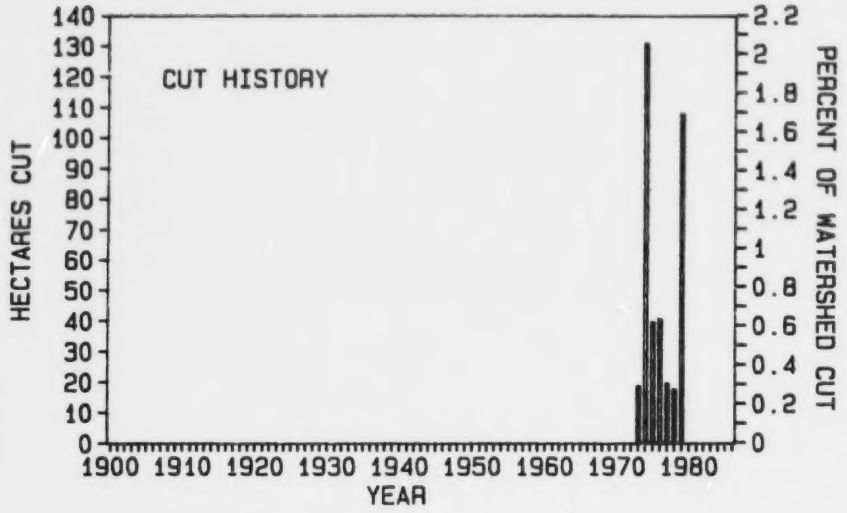



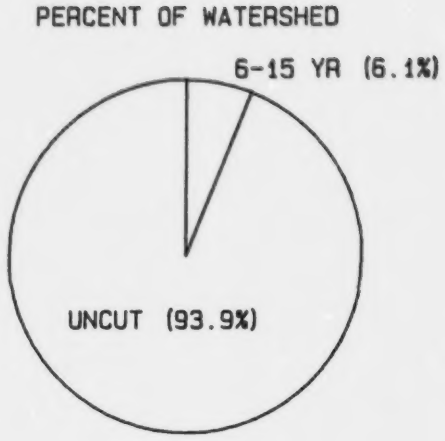

10. The forest tenure is T.F.L. 44. The region has been extensively logged adjacent to the mainstem throughout its full length.

This system has many 1st and 2nd order tributaries. The area around the mouth of the river is swampy and flows into a large estuary. Road access within the watershed is good.



# HESQUIAT HARBOUR CREEKS




11. The watershed is composed of T.F.L. 46 (85%), and T.S.A. (14%). The T.S.A. has been extensively logged by Pacific Forest Products over a narrow strip running the length of the watershed.

The areas around the mouths of the creeks are generally swampy and terminate in estuaries. Road access throughout the watershed is good.

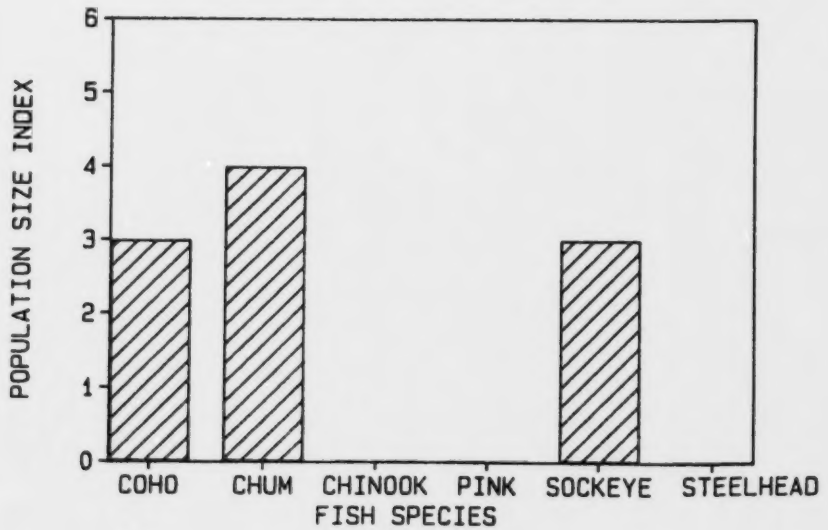
NO FISH RECORDED

# HESQUIAT LAKE & RIVER

## NO LOGGING HISTORY

12. The watershed is composed of T.F.L. 46 (86%), and T.S.A. (14%). The T.S.A. is being logged by Pacific Forest Products. The east side of the lake is unlogged. The west side has been logged at the headwaters of the creeks leaving the lower areas of the creeks unlogged.

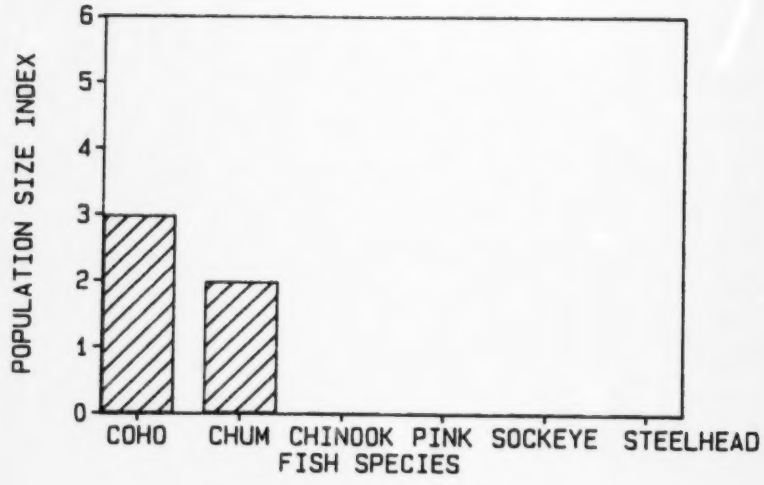
This system, combined with Satchie Creek, would make a good study pair. An unnamed lake is located within the accessible length to anadromous fish. Road access is poor.



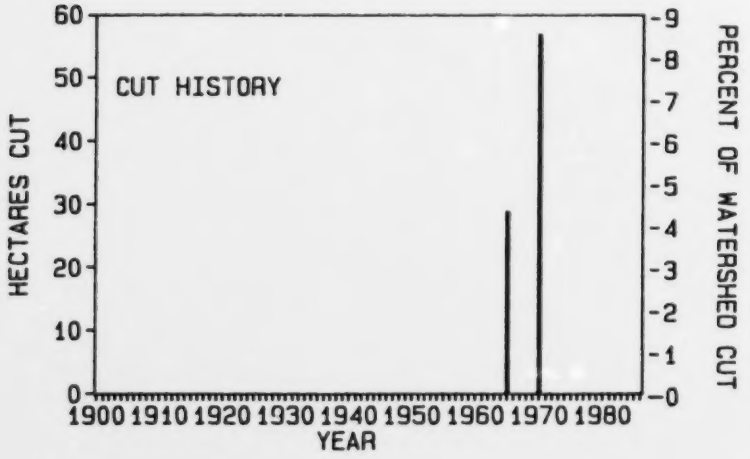
# HOOTLA KOOTLA CREEK

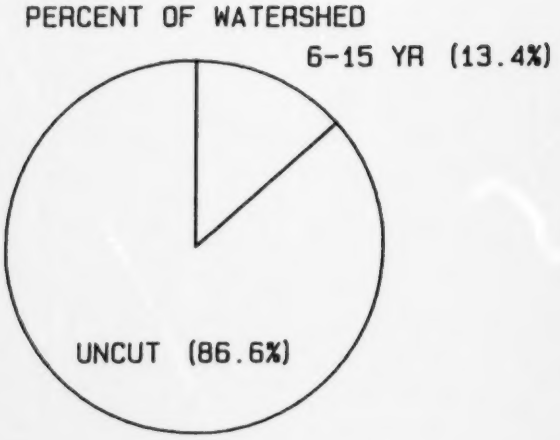
## NO LOGGING HISTORY

13. The watershed is composed of T.F.L. 44 (81%), and T.S.A. (18%). The area around the main channel is swampy. Three lakes within the watershed give it the potential to be a good rearing site, but rockfalls along the creek and a 5 meter falls at 1.2 km. make passage for salmon difficult during periods of low water levels. The main channel flows into a small estuary. Road access is poor.

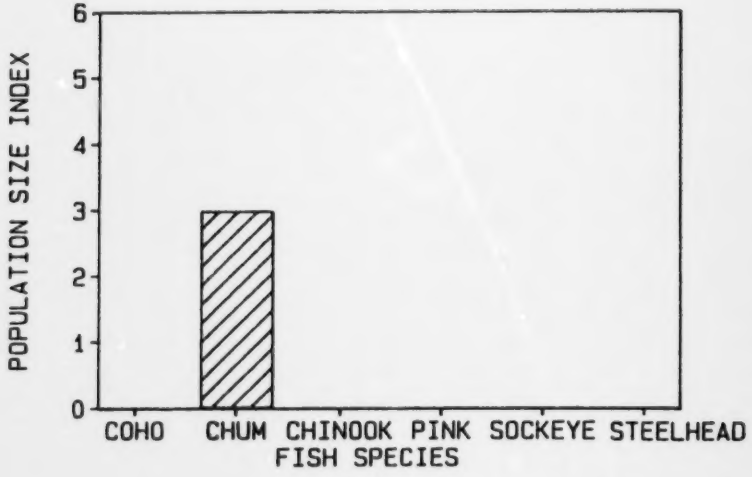


# HOT SPRINGS COVE CREEK



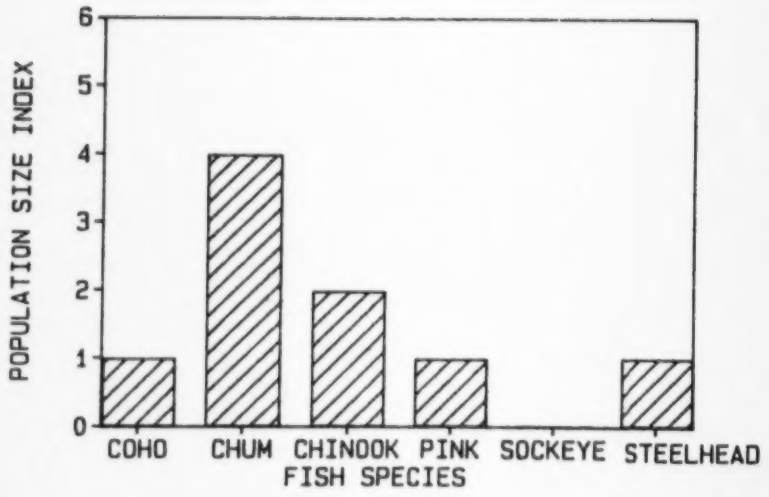

14. The watershed is composed of T.F.L. 46 (16%), and T.S.A. (83%). Logging in 1965 adjacent to the creek for its accessible length has caused scouring of the bottom. In addition, an impassible falls at 1.6 km. has limited the potential productivity of this creek. A large estuary is present.



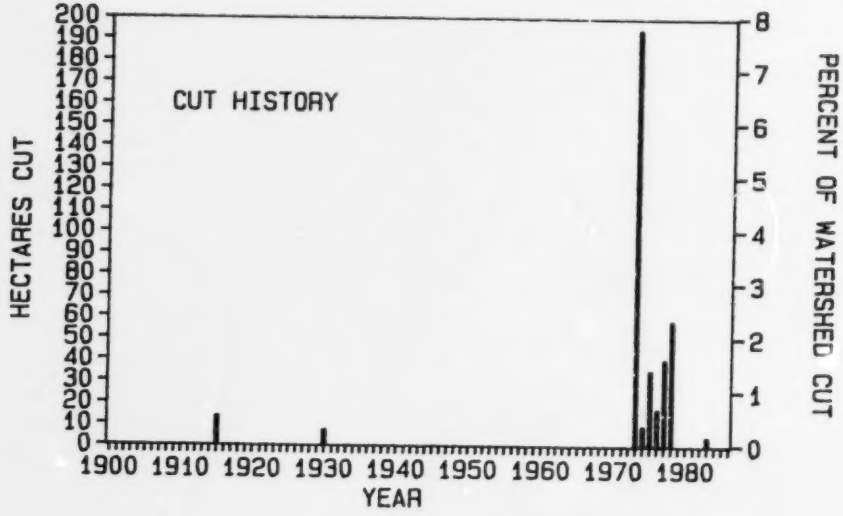
# ICE RIVER

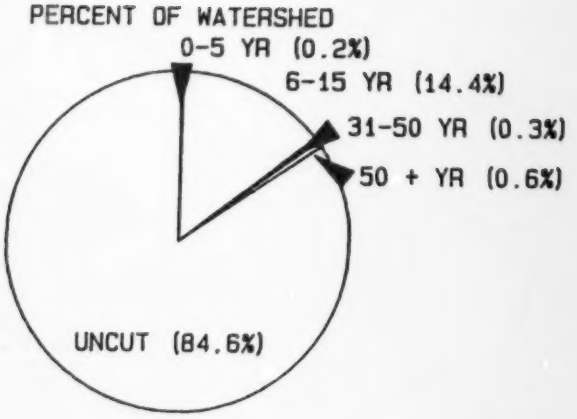
## NO LOGGING HISTORY

15. The watershed is composed of T.F.L. 46 (95%), and T.F.L. 44 (5%). An impassible canyon at the outlet of Camp Lake, and impassible falls at the outlet of Pretty Girl Lake make the lakes within the watershed inaccessible to anadromous fish. The stream is fast flowing and flows into a large estuary.

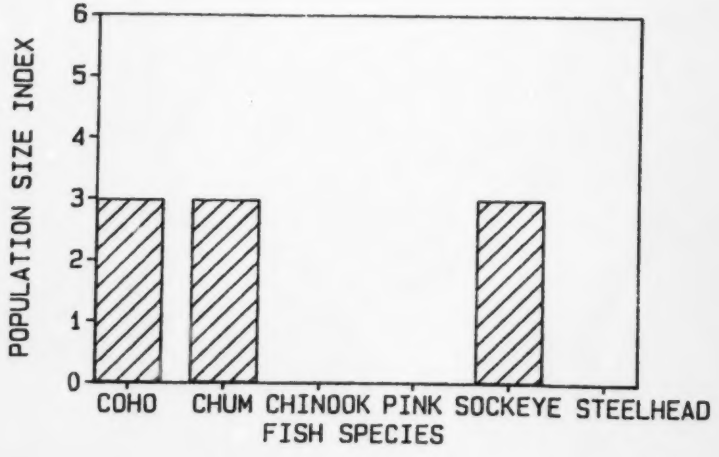


# KANIM LAKE & CREEKS

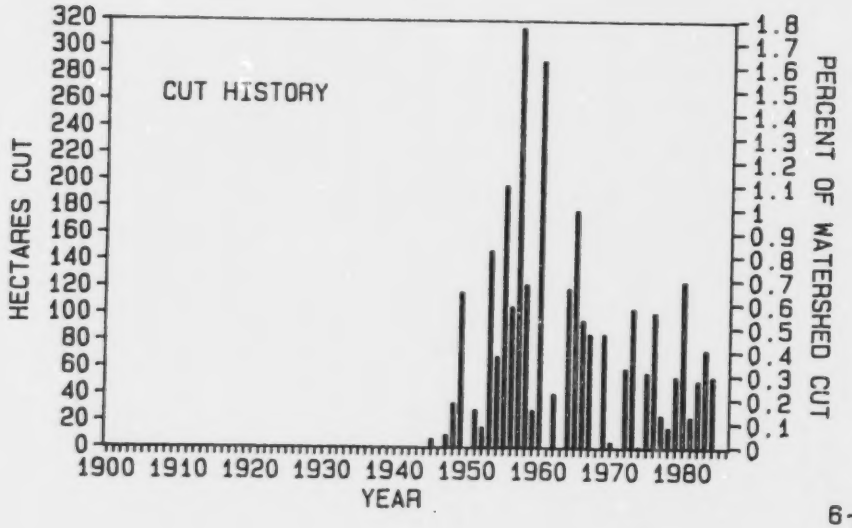


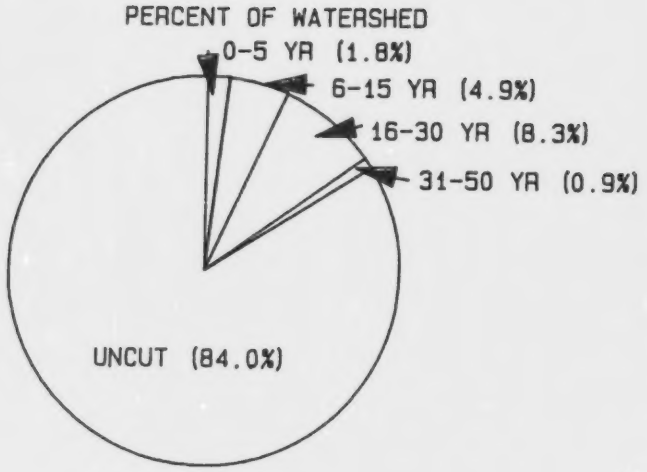




16. The watershed is composed of T.F.L. 46 (55%), T.F.L. 44 (20%), and T.S.A. (25%). The northern end of the lake, (T.S.A.), has been logged extensively by Pacific Forest Products. Numerous creeks flow through this area. The southern end of the lake and surrounding area are flat and swampy.

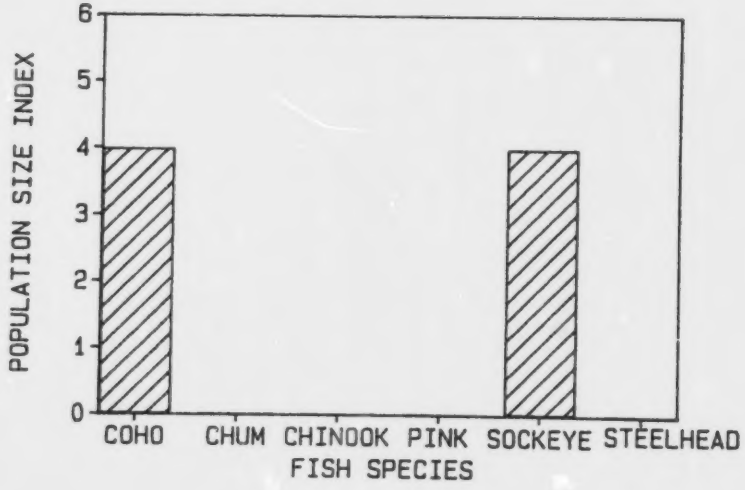


# KENNEDY LAKE

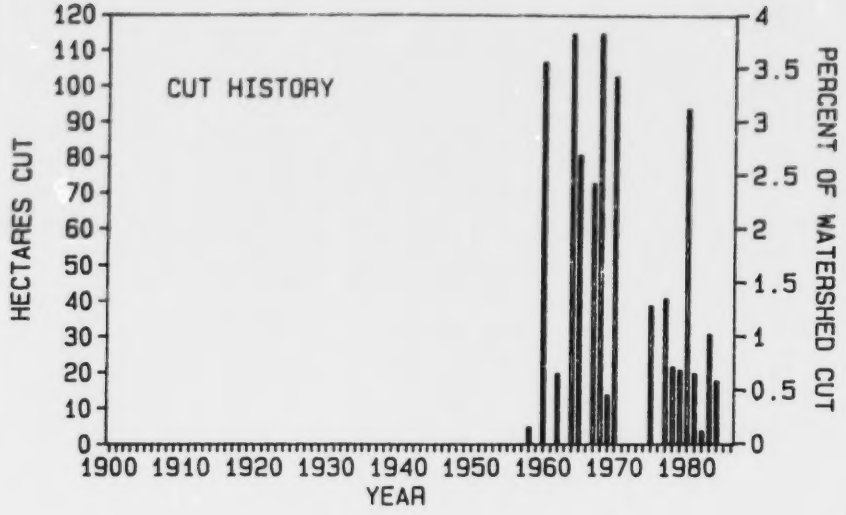


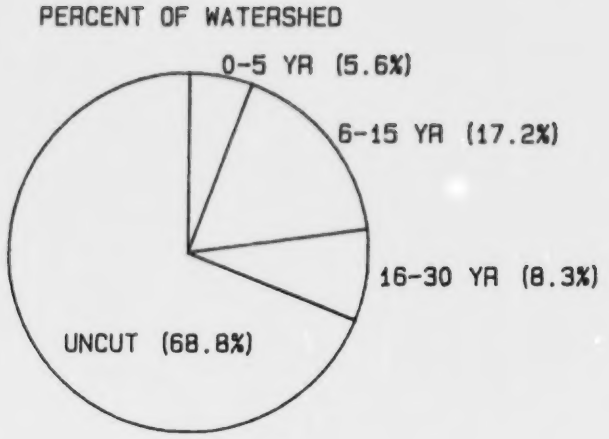




17. The watershed is composed of T.F.L. 46 (57%), T.F.L. 44 (39%), and deeded land (5%). Streams of the watershed have been logged with possible effect to habitat. Road access is very good.



# KENNEDY RIVER (LOWER)

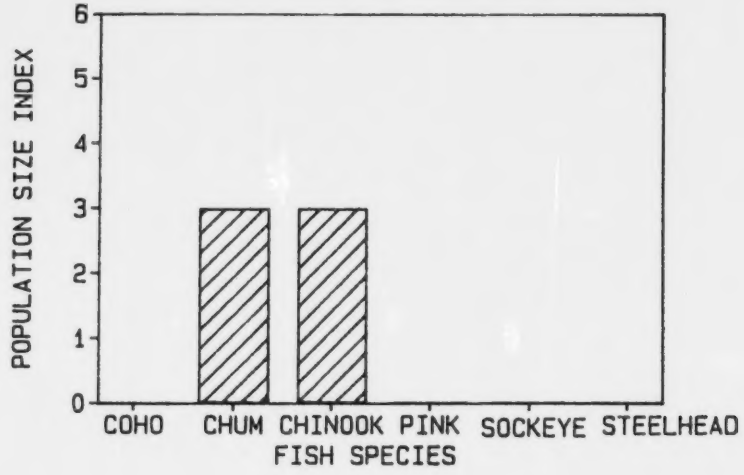


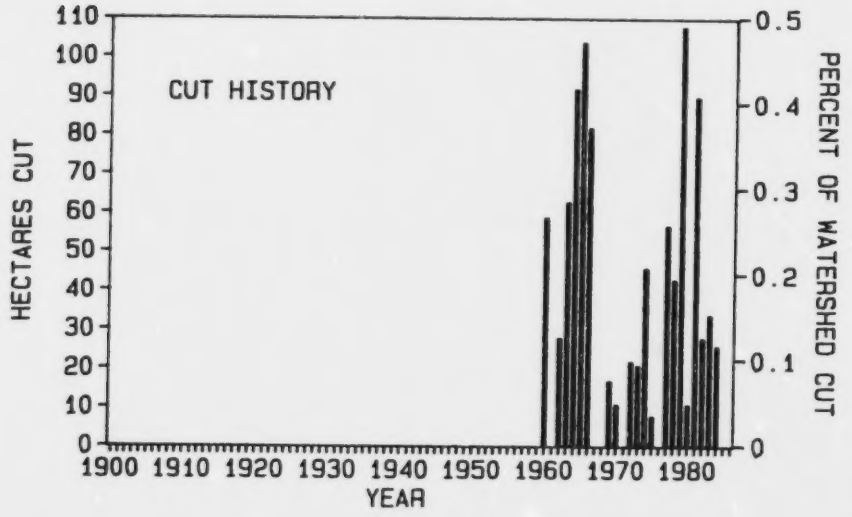

18. The watershed is composed of T.F.L. 44 (66%), and T.F.L. 46 (33%). The area adjacent to the river has been extensively logged.

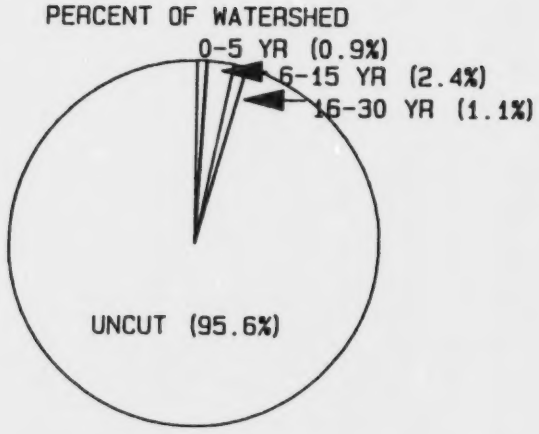
The river contains large pools and flows into an estuary at Kennedy Cove. The west end of the river is swampy.

Kennedy Lake is being fertilized by the Department of Fisheries and Oceans to enhance sockeye production.

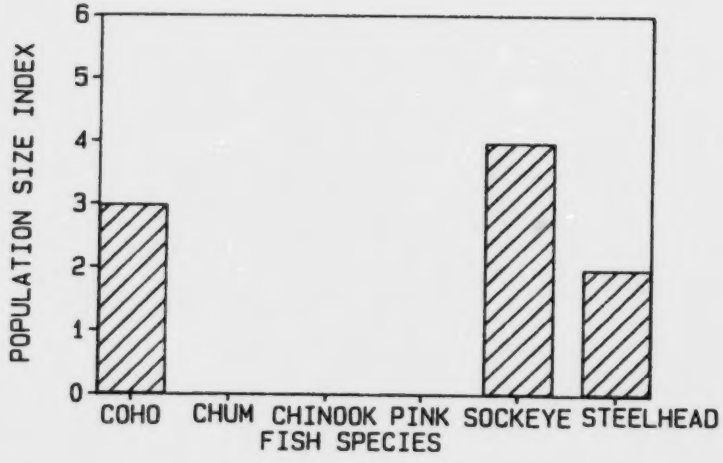


# KENNEDY RIVER (UPPER)

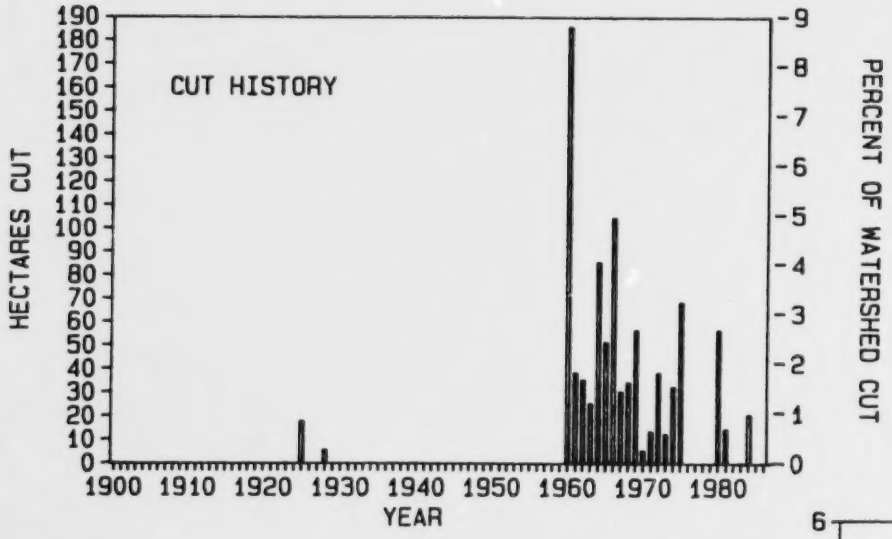


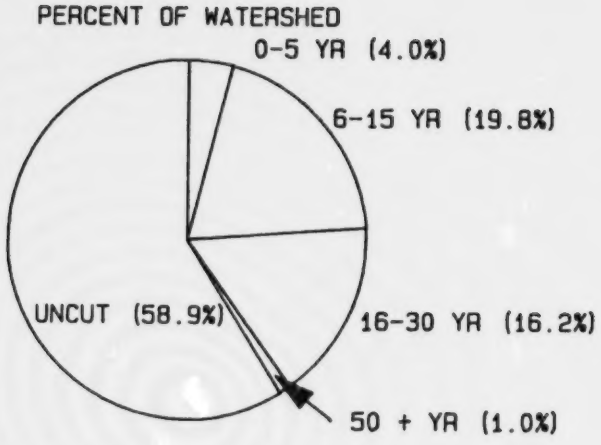




19. The watershed is composed of T.F.L. 44 (68%), and T.S.A. (32%). Logging has been concentrated along the mainstem, leaving tributaries unlogged. Excellent road access exists along the mainstem (Tofino highway), and the tributaries can be accessed by logging roads.

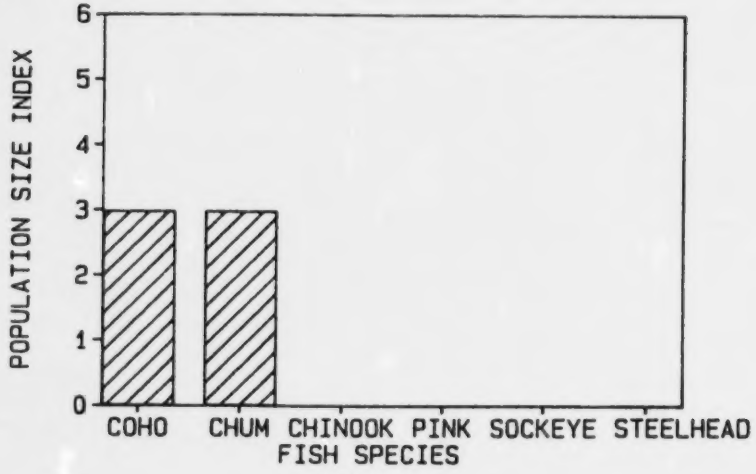


# KOOTOWIS RIVER

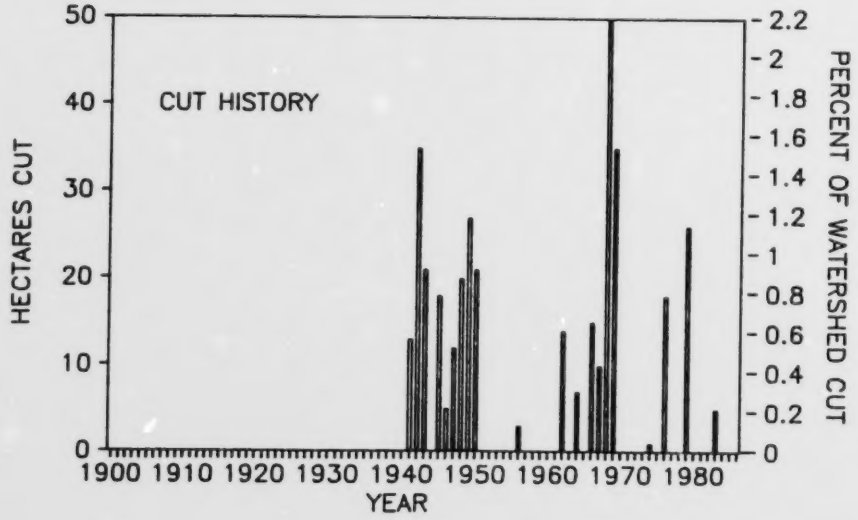


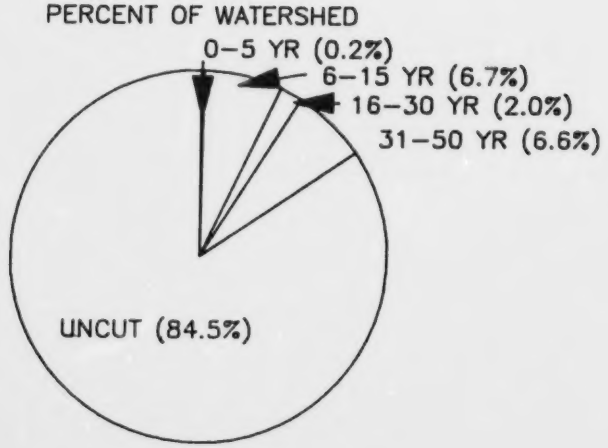




20. The watershed is composed of T.F.L. 44 (56%), and T.F.L. 46 (44%). The watershed was extensively logged prior to 1980 and fisheries officers reported the system to be in poor condition at that time. Road access is good.



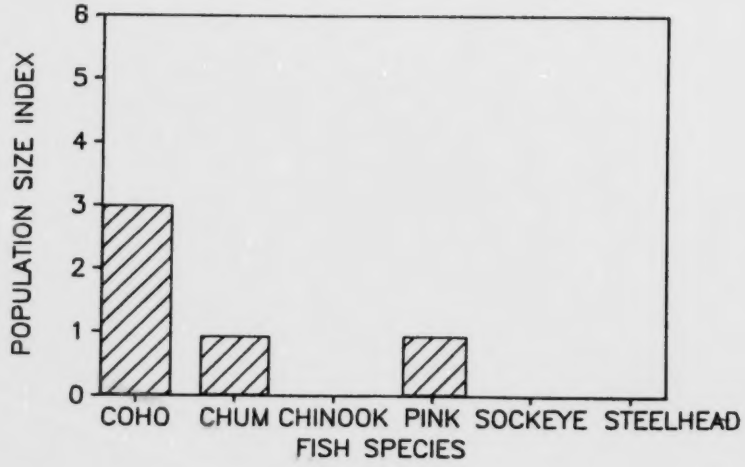
# LOST SHOE CREEK




21. The watershed is composed of T.F.L. 46 (72%), and T.F.L. 44 (16%). The Pacific Rim National Park comprises 10.5% of the watershed. Logging has occurred primarily at the headwaters.

The watershed is flat and swampy and has good road access. The creek flows into a large estuary.

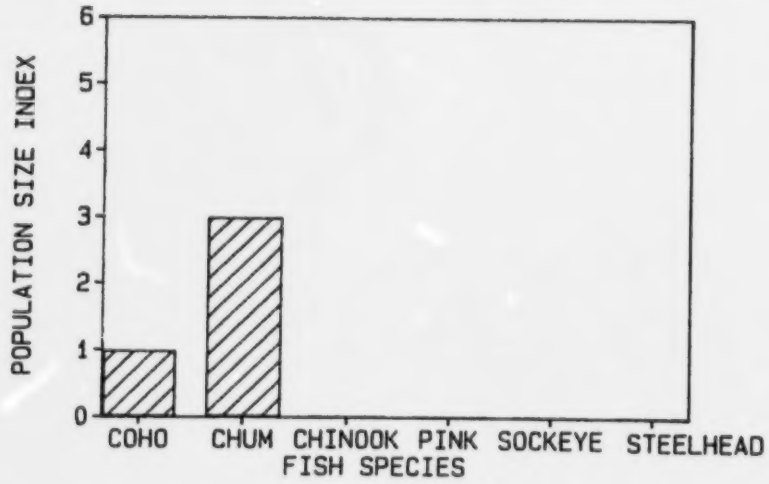


# MEARES CREEK

## NO LOGGING HISTORY

22. The watershed is composed T.F.L. 44 (61%), and T.F.L. 46 (39%). Good forest cover and adequate water flow may have led to over-spawning by chum.

There is no road access to or in the watershed. Vehicles would be barged in from Tofino.

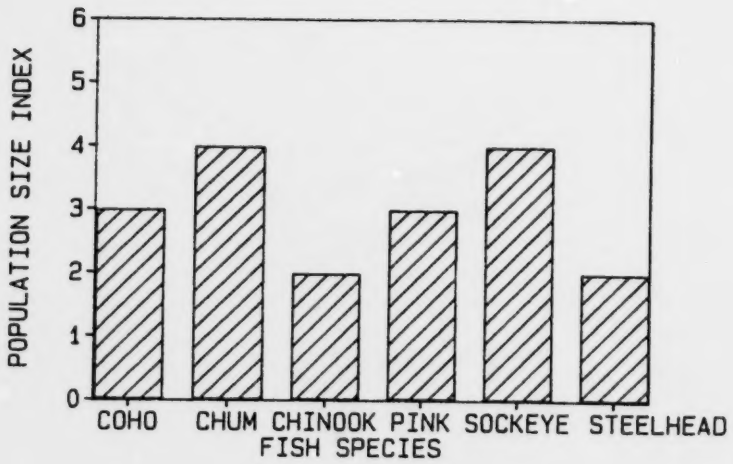


# MEGIN RIVER

## NO LOGGING HISTORY

23. The forest tenure is T.F.L. 44. This extensive system has many 1st, 2nd, and 3rd order streams with good paired study potential. Braided channels, swamps, and backwater areas are also present. There are many lakes within the accessible length to anadromous fish. A 50 ha ecological reserve exists at the mouth of the river. Road access is poor.

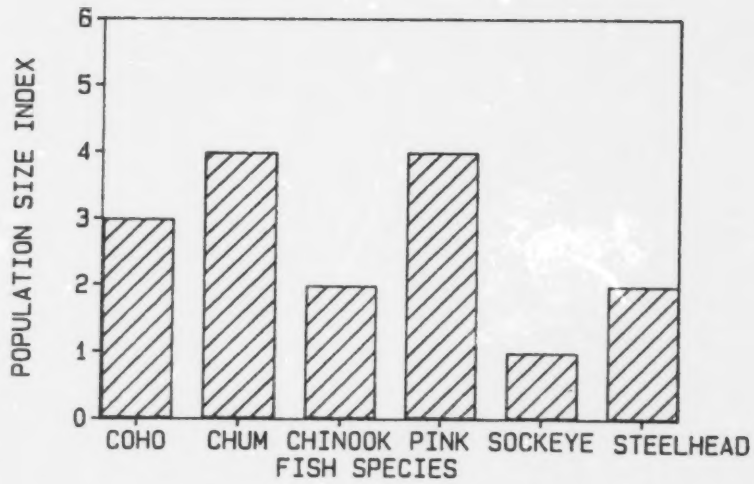
This river supports all anadromous species.



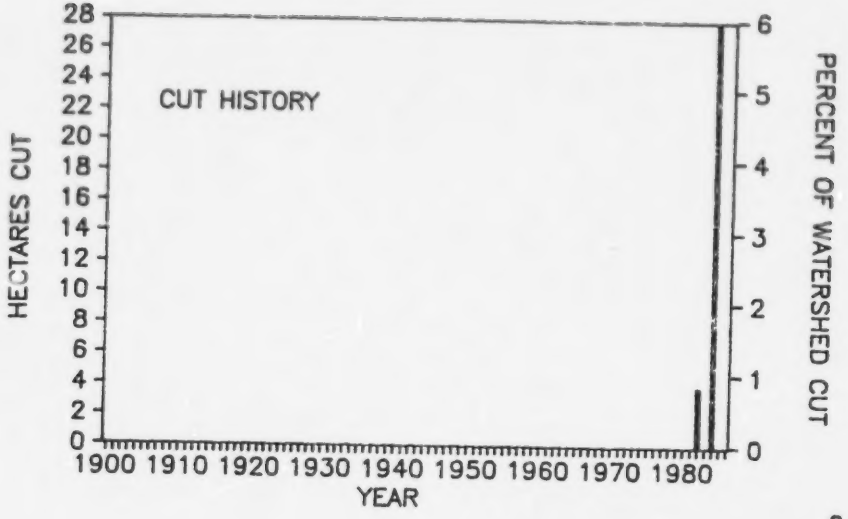
# MOYEHA RIVER

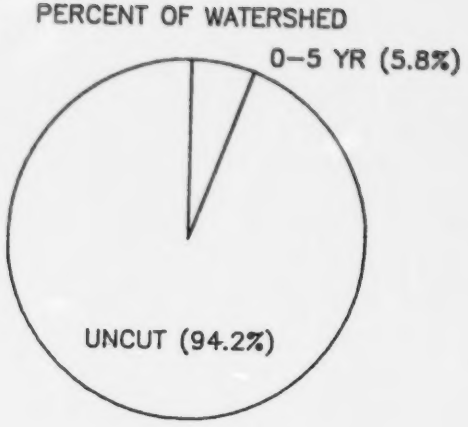
## NO LOGGING HISTORY

24. This watershed lies within Strathcona Provincial Park. It contains braided channels, marsh areas, and has a large slide area at 0.2 km. Access is by boat only.



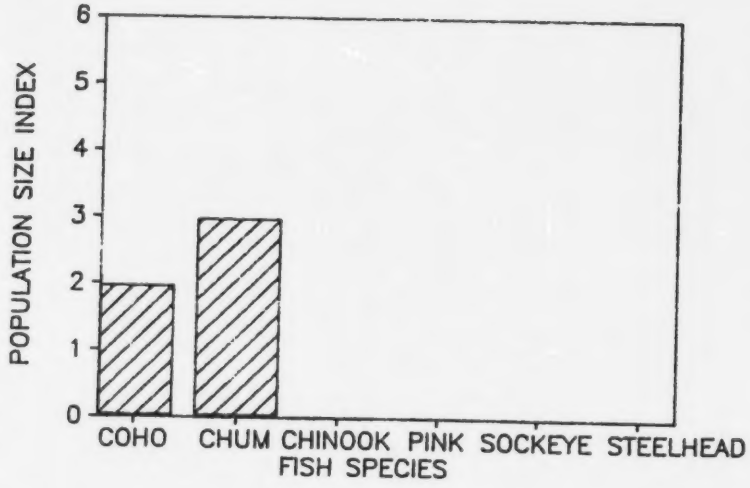
# RILEY COVE CREEK




25. The watershed is composed of T.F.L. 44 (90%) and T.S.A. (10%). Logging has not occurred adjacent to the mainstem.

Riley Lake is within the accessible length to anadromous fish. Physical conditions include little in-stream gravel and low water levels.

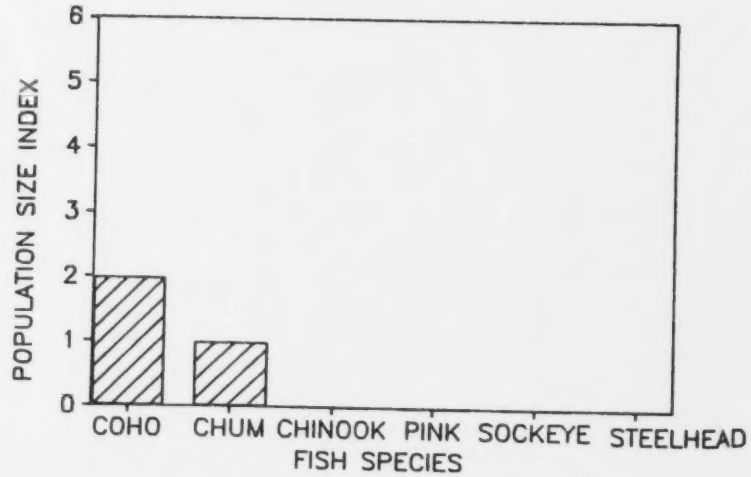


# SOUTH BAY CREEKS

## NO LOGGING HISTORY

26. This watershed is partially situated in Pacific Rim National Park (60%). Its forest tenure is T.F.L. 46.

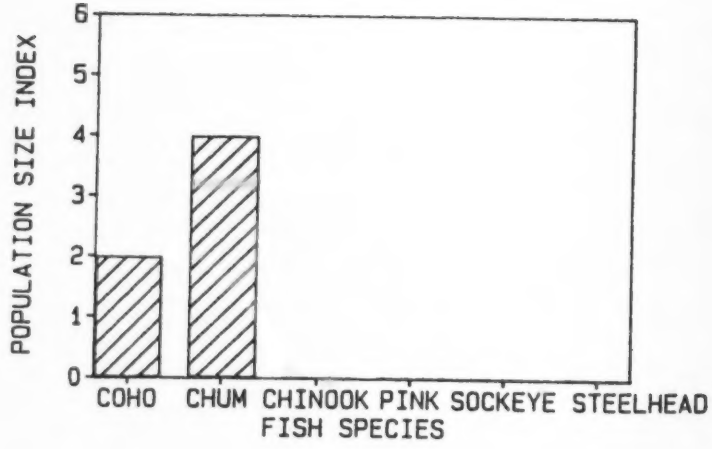
Small creeks flow into the large estuary in South Bay. Access to the watershed is good via the Alberni/Tofino Highway.



# SUTTON MILL CREEKS

## NO LOGGING HISTORY

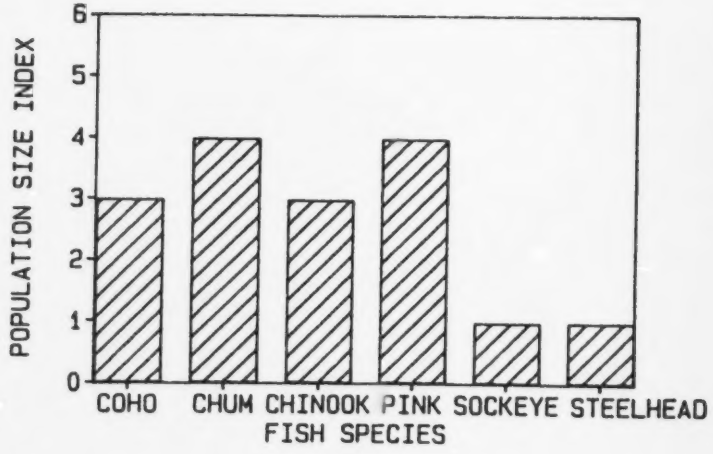
27. The watershed is composed of T.F.L. 44 (67%), and T.F.L. 46 (33%). A good rearing swamp is situated 1 km. upstream. The creek flows into an estuary that is contained within a protected harbour. Access is poor.



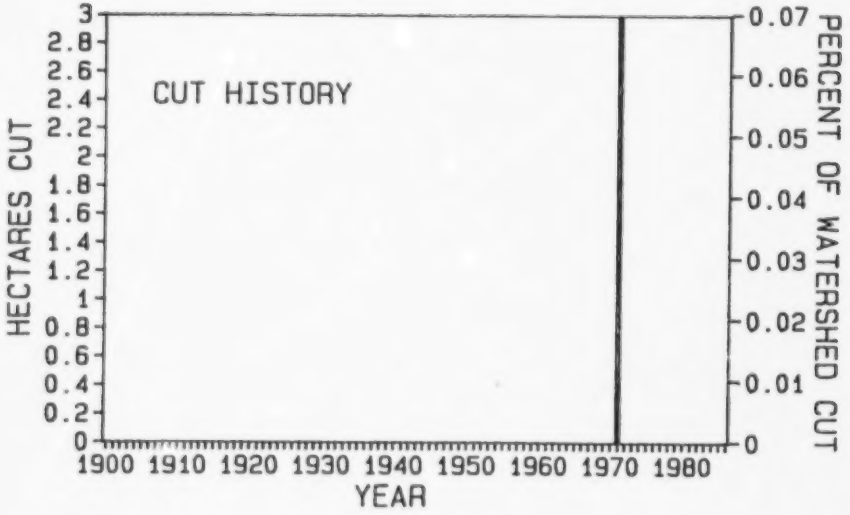
# SYDNEY RIVER

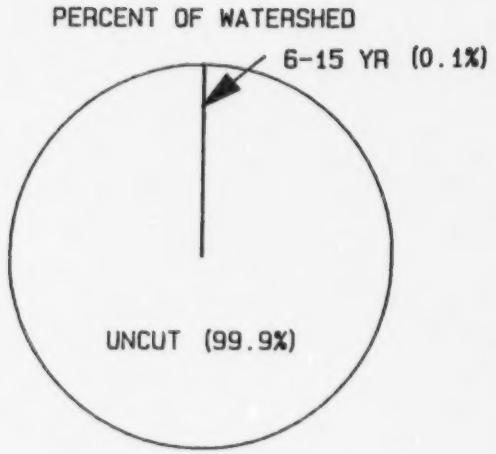
## NO LOGGING HISTORY

28. The watershed is composed of T.F.L. 46 (81%), and T.F.L. 44 (19%). The river contains braided channels and many spawnable tributaries. Irving Lake is not within the accessible length to anadromous fish. Access is poor.

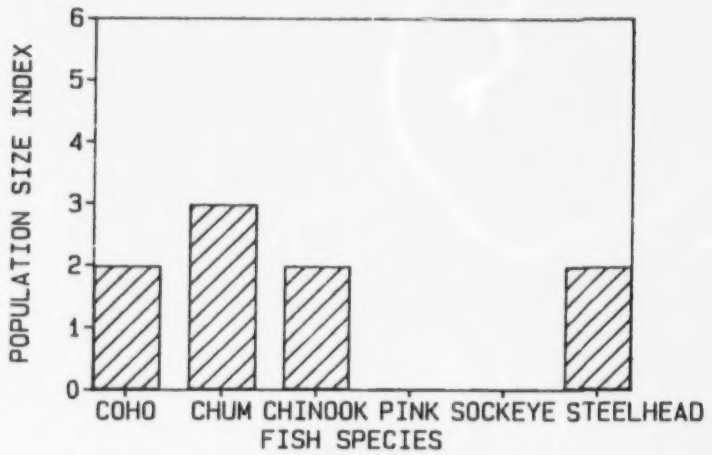


# TOFINO CREEK

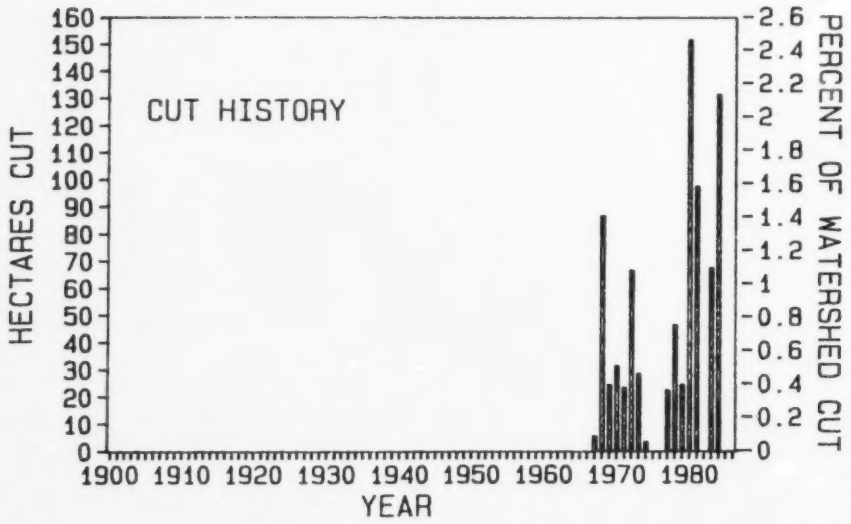


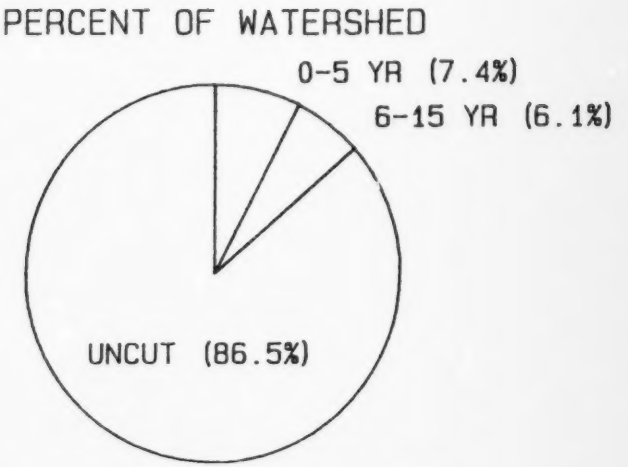




29. The forest tenure is T.F.L. 44. This creek contains many 1st, 2nd, and 3rd order creeks. It flows into a small estuary within Deer Bay. Twenty slides are found among the feeder streams. Access is poor.



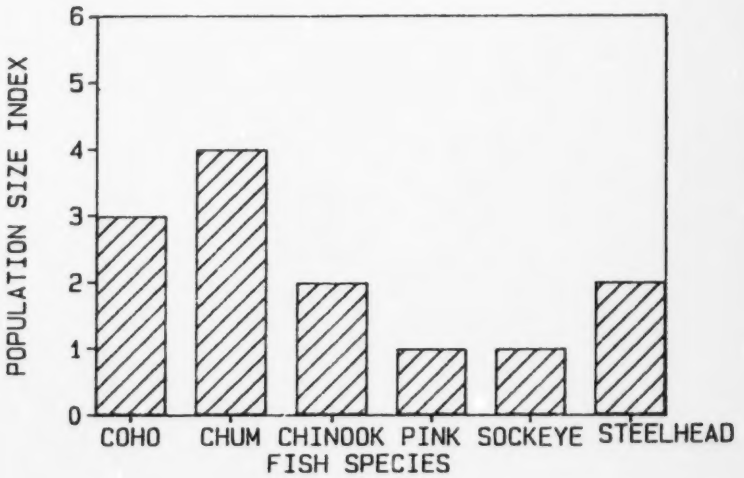
# TRANQUIL CREEK



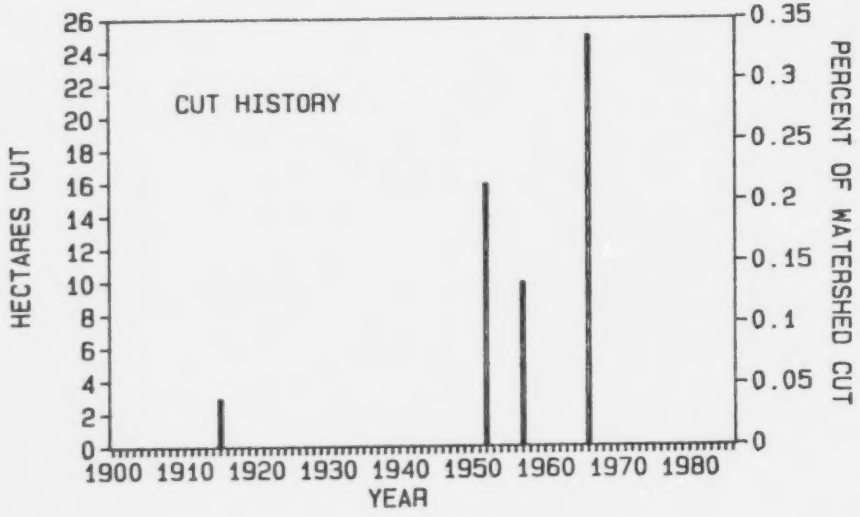



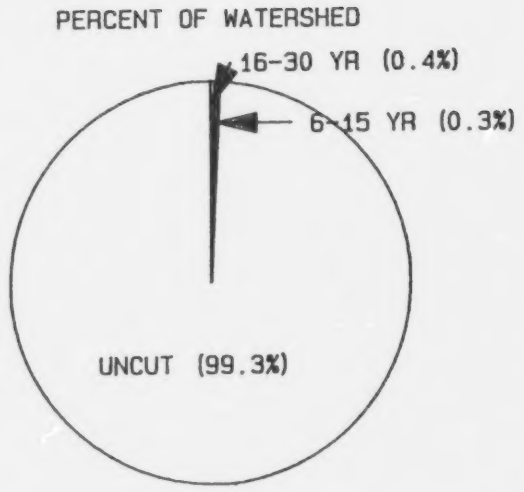

30. The forest tenure is T.F.L. 44. Logging has been extensive along the mainstem. A logging camp and log dump are located at the creek mouth.

The creek flows through braided channels and into an estuary within Tranquil Inlet.

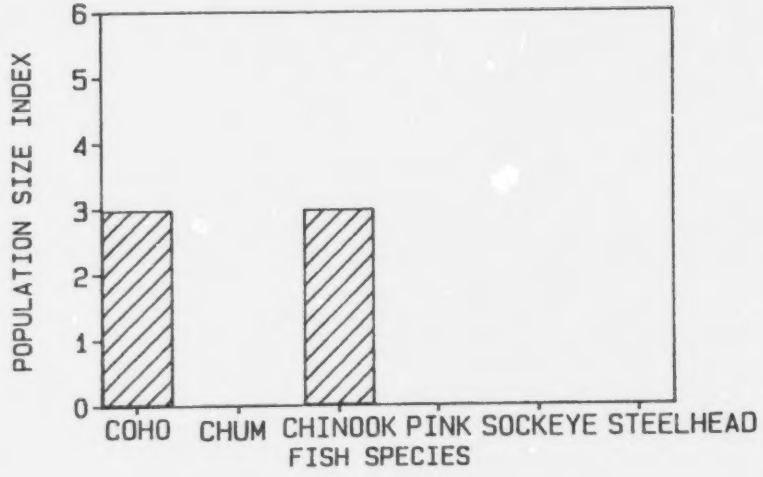


# URSA CREEK

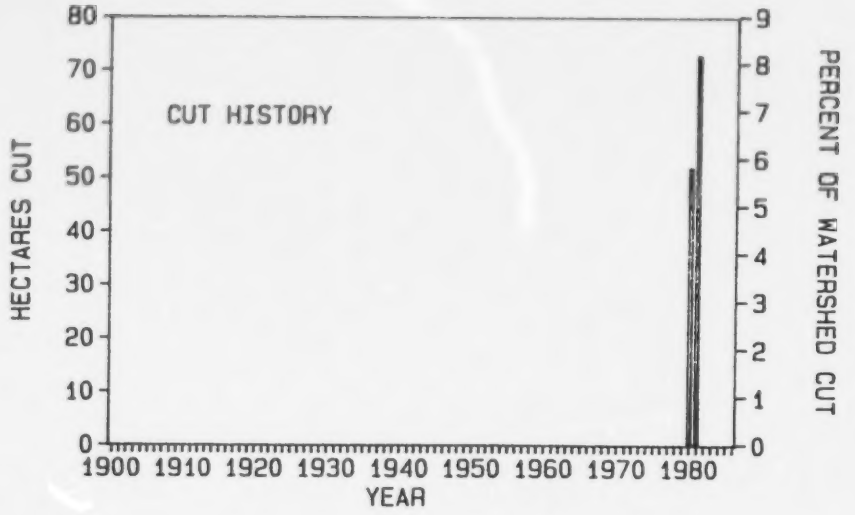


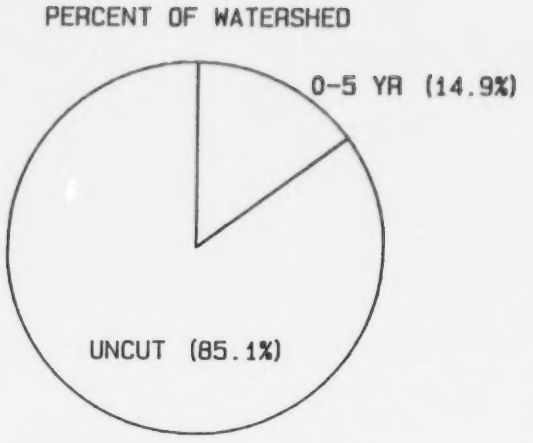




31. The forest tenure is T.F.L. 44. Ursa Creek watershed contains many 1st, 2nd, and 3rd order streams and would make a good paired study system with Bedwell River. A small lake is located within the accessible length to anadromous fish. Access is poor.

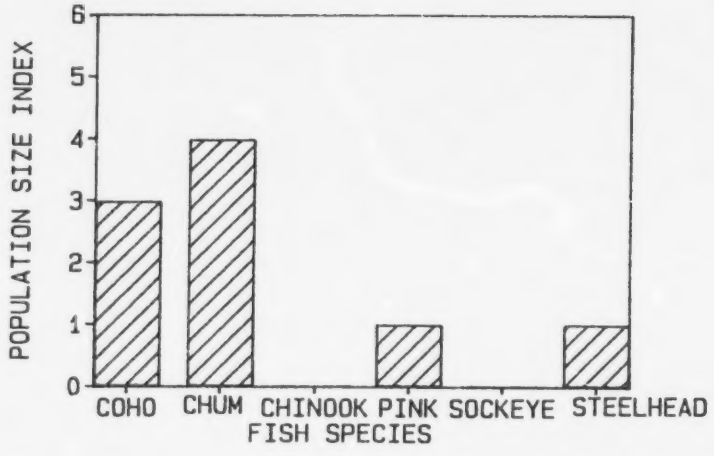


# WARN BAY CREEK



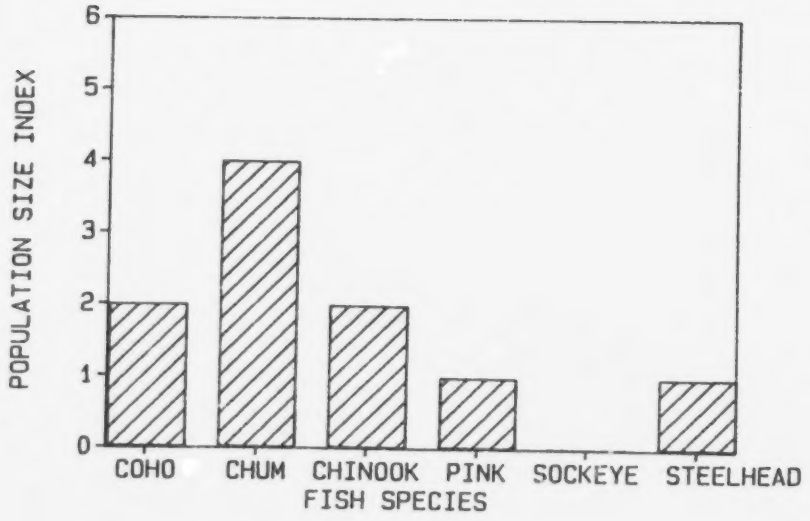

32. The forest tenure is T.F.L. 44. Logging has been carried out adjacent to the mainstem in the steep sided valley. A sizable estuary is present.



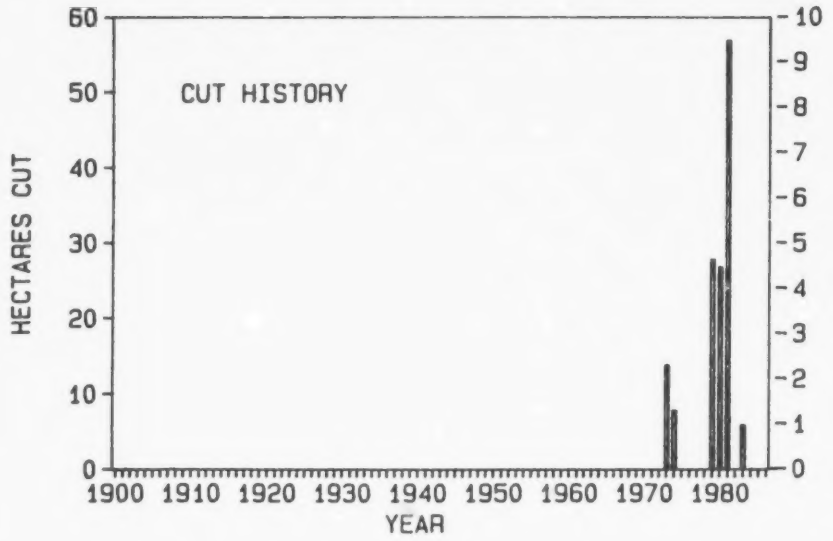
# WATTA CREEK

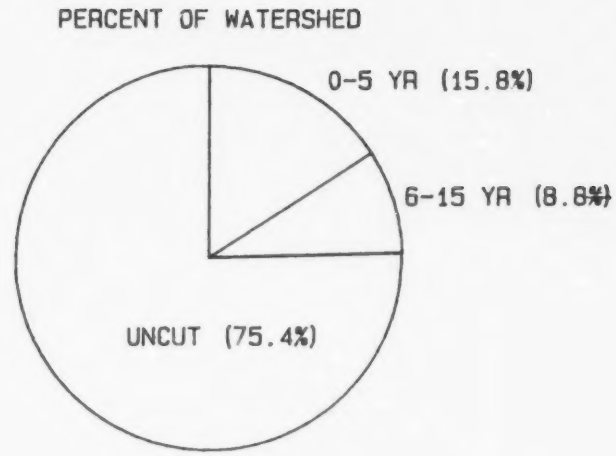
## NO LOGGING HISTORY

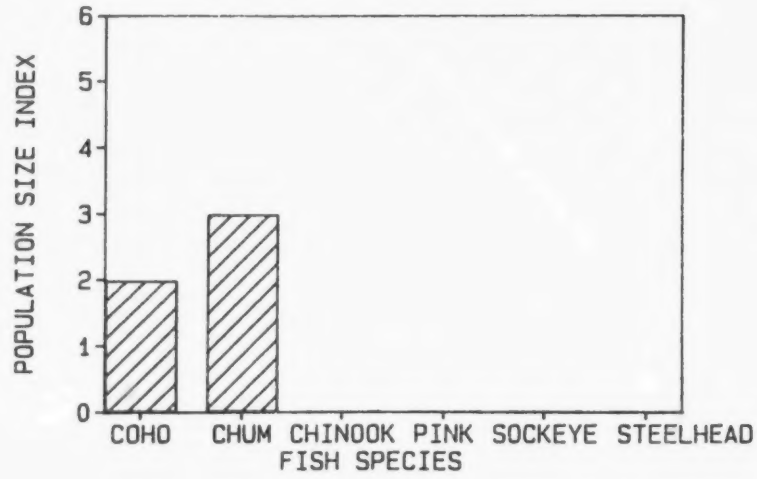
33. The forest tenure is T.F.L. 44. The lake present in the watershed is not within the accessible length to anadromous fish. Watta Creek and its southern branch, Shelter Creek, would make a good paired study system. The creek flows into an estuary. Road access is poor.



# WHITEPINE COVE CREEK




34. The watershed consists of T.F.L. 44 (48%), and T.F.L. 46 (49%). Logging has been restricted to the central area of the watershed.

Road access within the watershed is good. The creek flows into an estuary.